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TODAY

THE VIDEOTEX/COMPUTER MAGAZINE

PROFILING THE COMPUTERIST

A look at the Impact of Computing on Five Very Different Lives

Information Sickness: A Disease of the New Technology ?

Making Music on the Micro

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TODAY
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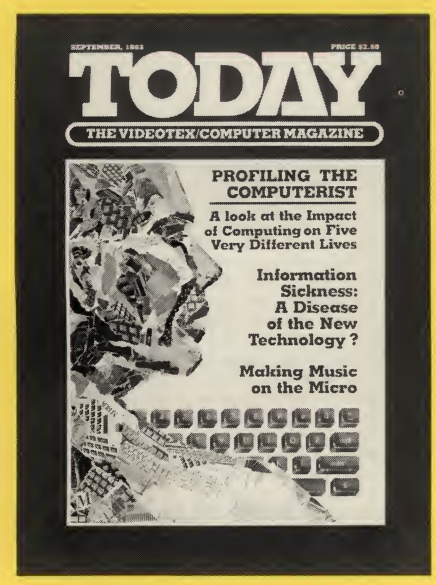

Cover
"Profile of a Computerist"
This month, TODAY takes a look at the personal impact of computing on five very different lives and on American society as a whole.
Cover art by Illustrated Alaskan Moose.

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Letters

Please address your letters to CompuServe electronic mail, ID number 70003, 1372 or to: Editor, TODAY magazine, 5000 Arlington Centre Blvd., PO Box 20212, Columbus, OH 43220. TODAY reserves the right to edit letters for length, content and clarity.

Computer Camping

I was interested in your article, "Computer Camping, Megatrend or Megafad?" (June 1983). There were many questions offered in this article that I would have been asking if the article had been printed before summer actually had begun. Fortunately, I picked an excellent Computer Camp for my 10-year-old daughter all by myself.

It is the Arizona Computer Camp in Mingus Springs. She spent a week of life enriching experiences there, and I felt the money was well spent. They spent 3 hours a day on the computers learning BASIC. The rest of the time was spent in "summer camp" activities. As I had never been able to attend a summer camp and my daughter had never evinced any interest in going away from home during the summer, I was nervous at the prospect. However, my daughter had a whole week of "firsts" and came away with a knowledge of life, how it can be and where she can go.

My child shall return to this Computer Camp and I recommend other parents send their children. My child could not have learned about the "business" end of a computer if she had not gone to this excellent camp. She also learned about her environment and her world. She got the best kind of education — experience!

Beth Rice
Mesa, Ariz.

Data Communications Response

It pleased me to no end to see Mr. Johnson's intelligent answer to my letter appear in the July issue of TODAY. Mr. Johnson brings up several points that I confess I glossed over or didn't cover at all, and I would like to take the opportunity to answer them.

In general, Mr. Johnson missed my point. The telephone network does not have the resources to support more than a privileged few data communications users. It was designed for voice communications, Recently, AT&T engineers modeled what would happen with increasing use of videotex; with more than a 3.5 percent market share the entire telephone network would crash.

To answer Mr. Johnson's points:

1. The telephone network may be worldwide, but it doesn't follow that, therefore, data communications are.

Within the USA and Canada, long distance data communication is possible, but not reliable enough. For this reason (and the cost of long distance) most timesharing service bureaus have found it in their interest to have their systems on some network, whether their own or some other service bureau's (e.g. TYMNET). Some, such as CompuServe, do both.

Electronic Bounce Back

Electronic Bounce Back is TODAY magazine's answer to the traditional reader service card. When you want more information about an advertisement in TODAY, simply use your CompuServe ID and access Electronic Bounce Back.

Instructions/Tips

Step 1
To enter the Electronic Bounce Back program, choose item 11, User Information, or GO EBB.

Step 2
After the introductory information, you will be prompted for your name and mailing address.

Step 3
A menu of available issues will then be displayed.

Example:

```
1 APRIL
2 MAY
3 JUNE
4 JULY
5 AUGUST
6 SEPTEMBER
```

After entering the issue of your choice, a list of advertisers will appear.

Example:

```
1 NEWSNET
2 UNITED COMPUTER SOFTWARE
3 COMMUNICATIONS ELECTRONICS
4 HEATHKIT
5 ELECTRONIC SPECIALIST
6 LEADING EDGE
```

Step 4
After choosing an advertiser, you will be shown the list of following options:

```
1 PRINT PRODUCT DESCRIPTION
2 REQUEST MORE INFORMATION
3 RETURN TO LIST OF ADS
4 SELECT ANOTHER MONTH
5 EXIT ELECTRONIC BOUNCE BACK
```

Step 5a
Selection 1 displays brief product descriptions.

Step 5b
Selection 2 sends your name, address and ID number to the selected advertiser. You will also be presented with a Comment option. You will be given three lines to make your request to the advertiser.

Step 6
After completing your request, the option menu (step 4) will be redisplayed.

Electronic Bounce Back puts you into direct contact with our advertisers.

When you respond to an ad in TODAY Magazine, you're "talking" directly to the advertiser. This means an end to the weeks of delay it takes for an ordinary reader service card to reach an advertiser (not to mention the additional time lapse for an advertiser to answer your inquiry once it is received).

EBB not only lets you respond to an ad with the usual name and address information, but it also allows you to ask for specific information, leave additional comments or in some cases even order a product. The advertiser in turn can reply, if so desired, through our electronic mail system, Email™.

TODAY is the first magazine to develop an "electronic" reader service and take advantage of the 2-way communications capabilities available through the use of videotex technology.

Electronic Bounce Back is easy to use. Just GO-EBB and follow the prompts. EBB will allow you to review an index of advertisers or go directly to the ordering section. Users of EBB will be able to request information from present advertisers in each issue of TODAY as well as from advertisers in past issues.

So GO-EBB and give it a try. We've cut out the middle man so CompuServe customers and advertisers can communicate directly with each other. This means a faster response to your inquiries and an added convenience for TODAY readers.

TODAY
THE VIDEOTEX/COMPUTER MAGAZINE

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ULTRA Diskettes

Now...Diskettes you can swear by, not swear at.

Lucky for you, the diskette buyer, there are many diskette brands to choose from. Some brands are good, some not as good, and some you wouldn't think of trusting with even one byte of your valuable data. Sadly, some manufacturers have put their profit motive ahead of creating quality products. This has resulted in an abundance of low quality but rather expensive diskettes in the marketplace.

A NEW COMPANY WAS NEEDED AND STARTED

Fortunately, other people in the diskette industry recognized that making ultra-high quality diskettes required the *best* and newest manufacturing equipment as well as the best people to operate this equipment. Since most manufacturers seemed satisfied to give you only the everyday quality now available, an assemblage of quality conscious individuals decided to start a new company to give you a new and better diskette. They called this product the *Ultra* diskette, and you're going to love them. Now you have a product you can swear by, not swear at.

HOW THEY MADE THE BEST DISKETTES EVEN BETTER

The management of *Ultra* Magnetics then hired all the top brains in the diskette industry to make the *Ultra* product. Then these top bananas (sometimes called floppy freaks) created a new standard of diskette quality and reliability. To learn the "manufacturing secrets" of the top diskette makers, they've also hired the remaining "magnetic media moguls" from competitors such as Verbatim, Memorex, Dysan and many more. Then all these top-dollar engineers, physicists, research scientists and production experts (if they've missed you, send in your resume to *Ultra*) were given one directive...to pool all their manufacturing know-how and create a new, better diskette.

HOW ULTRA DISKETTES ARE MANUFACTURED

The *Ultra* Magnetics crew then assembled the newest, totally quality monitored, automated production line in the industry. We know that some of Ultra's competitors are still making magnetic media on equipment that is old enough to vote. Since all manufacturing equipment at *Ultra* is new, it's easy for *Ultra* to consistently make better diskettes. You can always be assured of ultra-tight tolerances and superb dependability when you use *Ultra*. If all this manufacturing mumbo-jumbo doesn't impress you, we're sure that at least one of these other benefits from using *Ultra* diskettes will:

1. **TOTAL SURFACE TESTING** - For maximum reliability, and to lessen the likelihood of disk errors, all diskettes must be totally surface tested. At *Ultra*, each diskette is 100% surface tested. *Ultra* is so picky in their testing, they even test the tracks that are in between the regular tracks.
2. **COMPLETE LINE OF PRODUCTS** - For a diskette to be useful to you and your computer, it must be compatable physically. *Ultra* Magnetics has an entire line of 5¼-inch and 8-inch diskettes.
3. **SPECIALLY LUBRICATED DISK** - *Ultra* uses a special oxide lubricant which is added to the base media in the production of their diskettes. This gives you a better disk drive head to media contact and longer head and disk life.
4. **HIGH TEMPERATURE/LOW-MARRING JACKET** - A unique high temperature and low-marring vinyl jacket allows use of their product where other diskettes won't work. This special jacket is more rigid than other diskettes and helps eliminate dust on the jacket.
5. **REINFORCED HUB RINGS** - Standard on all *Ultra* mini-disks, to strengthen the center hub hole. This increases the life of the disk to save you money and increase overall diskette reliability.
6. **DISK DURABILITY** - *Ultra* disks will beat all industry standards for reliability at well over millions and millions of revolutions. They are compatible with all industry specifications as established by ANSI, ECMA, ISO and JIS.
7. **CUSTOMER ORIENTED PACKAGING** - All *Ultra* disks are packaged 10 disks to a carton and 10 cartons to a case. The economy bulk pack is packaged 100 disks to a case without envelopes or labels.
8. **LIFETIME WARRANTY** - If all else fails, remember, all disks made by *Ultra* Magnetics, (except bulk pack) have a lifetime warranty. If your *Ultra* disks fail to meet factory specifications, *Ultra* Magnetics will replace them under the terms of their warranty.
9. **SUPERB VALUE** - With Ultra's automated production line, high-quality, error-free disks are yours without high cost.

SAVE ON ULTRA DISKETTES Product Description	Part #	CE quant. 100 price per disc ($)
8" SSSD IBM Compatible (128 B/S, 26 Sectors)	**81726**	1.99
8" SSDD IBM Compatible (128 B/S, 26 Sectors)	**81701**	2.49
8" DSDD Soft Sector (Unformatted)	**82701**	3.19
8" DSDD Soft Sector (1024 B/S, 8 Sectors)	**82708**	3.19
5¼" SSSD Soft Sector w/Hub Ring	**50001**	1.79
5¼" Same as above, but bulk pack w/o envelope	**00153**	1.39
5¼" SSSD 10 Hard Sector w/Hub Ring	**50010**	1.79
5¼" SSSD 16 Hard Sector w/Hub Ring	**50016**	1.79
5¼" SSDD Soft Sector w/Hub Ring	**51401**	1.89
5¼" Same as above, but bulk pack w/o envelope	**00096**	1.49
5¼" SSDD 10 Hard Sector w/Hub Ring	**51410**	1.89
5¼" SSDD 16 Hard Sector w/Hub Ring	**51416**	1.89
5¼" DSDD Soft Sector w/Hub Ring	**52401**	2.79
5¼" Same as above, but bulk pack w/o envelope	**00140**	2.39
5¼" DSDD 10 Hard Sector w/Hub Ring	**52410**	2.79
5¼" DSDD 16 Hard Sector w/Hub Ring	**52416**	2.79
5¼" SSQD Soft Sector w/Hub Ring (96 TPI)	**51801**	2.49
5¼" DSQD Soft Sector w/Hub Ring (96 TPI)	**52801**	3.49

SSSD = Single Sided Single Density; SSDD = Single Sided Double Density; DSDD = Double Sided Double Density; SSQD = Single Sided Quad Density; DSQD = Double Sided Quad Density; TPI = Tracks per inch.
For less than 100 diskettes, add 10% to our quantity 100 price.
For additional compatibility info call Ultra Magnetics at 408-728-7777.

The Small Print

To get the fastest delivery from CE of your *Ultra* computer products, send or phone your order directly to our Computer Products Division. Be sure to calculate your price using the CE prices in this ad. Michigan residents please add 4% sales tax or supply your tax I.D. number. Written purchase orders are accepted from approved government agencies and most well rated firms at a 30% surcharge for net 30 billing. All sales are subject to availability, acceptance and verification. All sales are final. Prices, terms and specifications are subject to change without notice. All prices are in U.S. dollars. Out of stock items will be placed on back order automatically unless CE is instructed differently. Minimum *prepaid* order $50.00. Minimum *purchase order* $200.00. International orders are invited with a $20.00 surcharge for special handling *in addition* to shipping charges. All shipments are F.O.B. Ann Arbor, Michigan. No COD's please. Non-certified and foreign checks require bank clearance.

For **shipping charges** add $8.00 per case or partial-case of 100 8-inch discs or $6.00 per case or partial-case of 100 5¼-inch mini-discs for U.P.S. ground shipping and handling in the continental United States.

Mail orders to: Communications Electronics, Box 1002, Ann Arbor, Michigan 48106 U.S.A. If you have a Master Card or Visa card, you may call and place a credit card order. Order toll-free in the U.S. Dial 800-521-4414. In Canada, order toll-free by calling 800-265-4828. If you are outside the U.S. or in Michigan, dial 313-994-4444. Telex 810-223-2422. Order your *Ultra* diskettes from Communications Electronics today.

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Letters

2. There is nothing intrinsic about cable that makes it one way; the limiting factor is not the cable itself but the equipment on the vendor's and the customer's end. Cable is an ether much as the airwaves are.

3. Like cable, the telephone network requires frequent repeaters that must be powered. The difference is that the telephone network (in the USA and Canada, mind you!) has substantial backup capability for extremely reliable voice communications. Once cable is used for more than transmitting The Love Boat, one can expect the same factors that lead to reliable telephone communications to recur.

4. Neither channel space nor capacity has to be sacrificed to put data on cable. The broadcast frequencies are a small part of the overall spectrum.

Mark Crispin
Senior Software Engineer
Stanford University
Stanford, Calif.

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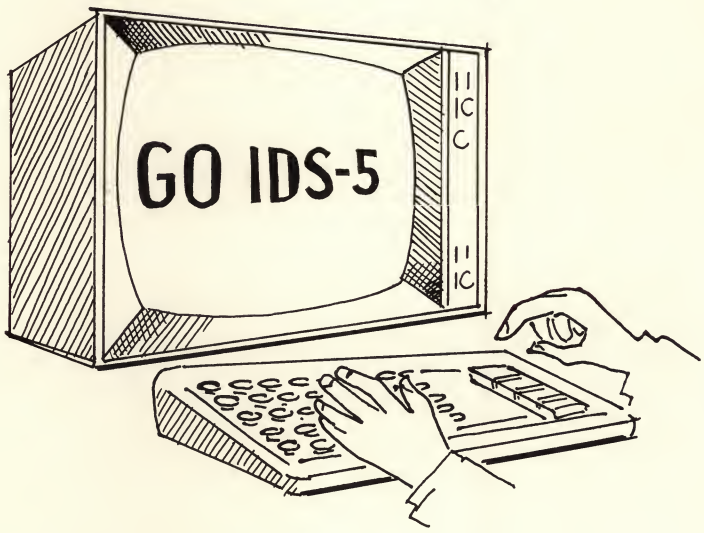
IDS, one of America's largest financial service firms is now on-line to benefit CompuServe™ subscribers. Since 1894, IDS has been helping people manage money.

If you are a CompuServe subscriber, you now have access to financial planning help from IDS. We have information concerning essential money management ideas, including: the family budget, mutual funds, employee benefits and understanding insurance.



By entering GO IDS-5 you may also request our free 24-page booklet: "Financial Planning—How it works for you". This booklet demonstrates by case study, several examples of people in different situations planning their financial future. We think you'll find it helpful.

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Clean Slate

I have just finished reading the review of the *Clean Slate* Word Processing system by Stewart Schneider and Charles Bowen. As a beta tester and two-year user of the program, I would like to expand upon the review that appeared in the August issue. I don't think the review did justice to *Clean Slate* nor its author, Henry Milton.

Clean Slate is designed to run on TRS-80 Model I and III using TRSDOS, LDOS, NEWDOS80 or DOSPLUS 3.4. It can be tailored by the user for almost any printer and has the ability as a terminal package to talk with mainframes. This letter is being composed and transmitted with *Clean Slate*.

I would like to clear up a few comments made by the reviewers:

•*Clean Slate* provides three methods of insertion, including one character at a time; splitting a line and opening between two lines.

•One of the major advantages I have found is that the program is page oriented, not memory oriented. I can see exactly what will be on the page and where it will be. Scrolling from side-to-side is easily done by setting tab location.

•Implementation of all the features and customization to a printer can take some time to accomplish. But if the user does not want to customize *Clean Slate*, the default parameters provide quick configuration of the program.

•Schneider and Bowen point out "the lack of generally accepted features," but fail to mention such features as the glossary function and the two-dimensional block move — potentially two of the most powerful command systems of the program. The glossary function allows the user to name, define and replay any series of keystrokes at a later time. The two-dimensional block moves allow production of dual column articles and exact movement of tables, charts, etc.

Clean Slate may take a little time to learn, but the flexibility and finished products available make it well worth the investment.

James A. Huggans

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Dear Reader,

Among the profiles in this month's cover feature is communications professor Gerald Phillips who summed up quite well the way a man-computer relationship should be: "I'm Simon Legree and that computer is an abject, groveling slave." Those of us who have welcomed computers into our lives might do well to tape Mr. Phillips' adage to our monitors.

Of all segments of the Fourth Estate, computer publications have been especially guilty of worshiping these sand, metal and plastic gods to the near complete exclusion of the human element. Stuart Luman Seaton's chilling call in the 1950s to ". . .eliminate humans in the data processing chain" still haunts us (see "Information Sickness: A disease of the New Technology?" on page 25).

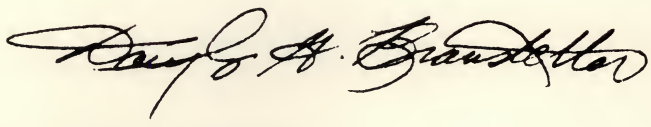
We seem to be stuck in a "people talking about things" plane: How many more articles about the incredible shrinking silicon chip must we endure? Does the world need another "computer buzz words" dictionary? In the whole scheme of things, "people talking about things" is really only a small cut above "people talking about people," (i.e. the supermarket scandal sheets). A higher goal is "people talking about ideas," and it's through this dimension we'll master the problems and potential pitfalls of the Information Age.

It appears that we're beginning to break away from the "physical mode" and talk about the computer as it fits into society. Interestingly (although not surprisingly) enough, this trend is emerging from futurist/science fiction and psychology publications rather than computer periodicals and books.

At TODAY, we're making an effort to address the social issues with cover features such as "Profiling the Computerist" (page 14) and the "Information Sickness" piece mentioned above. We even like to introduce an occasional dose of the most human element of all — humor (see The Hacker: A Humorous View, page 23). At the end of the magazine each month, starting with this issue, contributing editor Charles Bowen will wax philosophical in a new feature "On Line." We're sure you'll enjoy it and other features intended to complement the balance of industry and business features, reviews and product announcements.

Perhaps the brightest sign that humanity is on the comeback in this whole business of computers is from the computer industry itself. MicroTie Systems Corporation — the people who wrote flight software for the Harrier jump jet — have come out with a new "software" product called the "Byte Bat." They call it the first "non-serious" peripheral for the serious computer user. The "Byte Bat" is a 17-inch foam rubber baseball bat that can be used to thrash an uncooperative computer or terminal without the serious side-effects of the wooden variety. Specially designed to serve as a frustration shunt, the Byte Bat has numerous B.A.U.D. rates (Basic Aggressive Units of Dissatisfaction) and is hailed as the first universally compatible foamware.

Bravo!



Douglas G. Branstetter
Editor

wabash® diskettes for as low as $1.29 each!

Now get Wabash Quality at a CE Price

For over 17 years, Wabash has been making high quality and dependable computer products. Wabash diskettes are made to provide error-free performance on your computer system because every diskette has been totally and hypercritically tested. Since you can now buy Wabash computer products directly from CE, the world's largest distributor of magnetic media, you can now get maximum savings on every order. You can even order toll-free.

New Wabash Six Year Warranty

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VIDEO DISPLAY RADIATION AND PREGNANCY

Can video display radiation be harmful to pregnant women?

Suspicion about displays has been expressed since 1980 when several small groups of co-workers who operated or worked near terminals during pregnancy reportedly experienced a high rate of miscarriages, malformed babies, or both. These "clusters" of ill-fated pregnancies led to speculation that terminal display screens emit radiation that threatens unborn babies. Is there any scientific data backing up this thought?

Illustrated Alaskan Moose

"Clusters of miscarriage and birth defects (and other health problems, such as cancers) can and do occur purely by chance," says Dr. Arthur J. Salisbury, vice president for medical services for the March of Dimes. "There are so many women of child-bearing age who work at or near VDTs (video display terminals) that some co-incidental VDT-linked clusters of problem pregnancies are to be expected."

According to Dr. Salisbury, a cluster of birth defects is more likely to reflect a specific cause if the birth defects are alike, but this has not been true of reported display-linked cases. Equally important, the alleged display-linked birth defects have not resembled the kinds of fetal damage that any type of radiation is known to cause.

Dr. Salisbury notes that display radiation levels have been studied and tested extensively by the U.S. Food and Drug Administration's Bureau of Radiological Health, the Occupational Safety and Health Administration, the National Institute of Occupational Safety and Health, and the Canadian Radiation Protection Bureau. According to Dr. Salisbury, all report that there is no radiation hazard to any aspect of human health.

"There is general agreement that prolonged operation of VDTs can cause eyestrain and neck, shoulder or back pain, but these discomforts have no known effect on the outcome of pregnancy," says Dr. Salisbury.

— John Edwards

MA BELL IN 1984 A.D.

According to the Yankee Group, a leading Boston-based market research and consulting firm, life after the divestiture of Mother Bell will be the best of times, the worst of times. In the year 1 A.D. (After Divestiture), both short-term and long-term strategies will be needed to cope with the post-divestiture fall-out.

The Yankee Group believes that, within three years, the deployable corporate networks — essentially miniature telephone companies — will reach out to clients and suppliers, dynamically reconfigure to meet growth or recession, and quickly integrate new facilities and acquired businesses.

Several different strategies for market segments in the communications industry — expansion strategies for the ex-BOCs, migration strategies for ATT/American Bell, competitor strategies, as well as user strategies — were presented at a Yankee Group seminar, "Communications Strategy in the Year 1 A.D.," held in New York and Palo Alto, Calif., last month.

TARGETING VIDEOTEX MARKETS

Richard Weening, chief executive officer of AgriData Resources, called for publishers and owners of information content to think marketing "in the old-fashioned way" when considering how and by what means to electronically disseminate their data.

"It's really no different from marketing print products . . . target the natural market and choose the distribution system which can sell that market," Weening told attendees of Videotex '83 at the New York Hilton in a session entitled, "The Business Markets: Pathways to Early Profits."

"Too little attention has been paid to customers, markets, and profits of information content," Weening said. This is mainly because development has been driven by computer professionals rather than publishers and professional communicators, he added.

Weening, whose company operates AgriStar, a specialized database vendor targeted to farmers, ranchers, and agribusiness, suggested that database owners first put their information content to the "electronic test":

1. Does the customer need it for money-related reasons?
2. Is the information hard to get, or is it very expensive or time-consuming to acquire by the media in which it now exists?
3. Does the information change frequently?

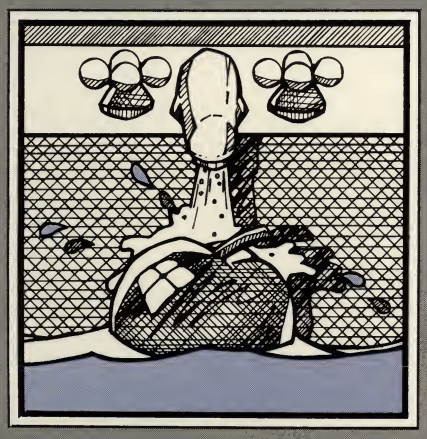
There can be profits in videotex, Weening said, "for those publishers who take control of the technology and make it their servant for the marketing and delivery of information uniquely suited to electronic delivery."

AgriData Resources, a subsidiary of Raintree Publishers of Milwaukee, Wisc., started commercial operation of AgriStar in November of last year. AgriStar's information providers include a number of local, regional, and national databases, such as Commodity News Service, *The Des Moines Register*, Wisconsin State Department of Agriculture, and, starting in September, the Associated Press Viewdata Wire Service,

WOZ WATCH

Unpredictable Steve Wozniak, the whiz kid who made millions by co-founding Apple Computer and lost millions running rock concerts in California, faces a potential $25-million financial bath from his four-day 1983 US Festival, but that won't stop him from running another one next summer.

Wozniak is optimistic about staging



a third festival, but has soured on the event's "us" philosophy. Unuson, the firm created by Wozniak to stage the event, lost $10 million from the 1983 festival. A $10-million lawsuit has been filed in San Bernardino Superior Court by Entertainment Travel Service Inc., which was hired to manage the Memorial Day festival's needs. The firm says it didn't get the business promised. Unuson is also being sued for $5 million by food vendors who claim they didn't reap the profits promised them.

Wozniak has departed Unuson for the time being. "You can say I split over ideas and philosophy, but I still am in Unuson," he says. "I'm not running a festival now, so I've moved out of there into my Apple office in Cupertino, Calif. When I start to run the third festival, then I'll be back full time at Unuson. I never left Apple; I am still part-owner, but I've been busy lecturing and serving as a consultant. Now I want to get back to the engineering work of computers."

— John Edwards

TELETEL GOES DOWN UNDER

Intelmatique, the international marketing arm for the French telecommunications administration, has announced completion of a major industrial agreement between Honeywell/Australia and Steria, a leading French software house.

The agreement permits Honeywell/Australia to distribute the Videopac range of Steria-developed Teletel videotex software throughout Australia and New Zealand, and the islands of Fiji and Papua, New Guinea.

Honeywell/Australia plans to open a Teletel videotex center in its Sydney headquarters, with Steria Videopac software running on a Honeywell DPS 6 minicomputer. Intelmatique will initially supply editing terminals to permit Honeywell/Australia to create its own pages, a number of user terminals to insure a wide distribution to remote access locations in other Australian cities.

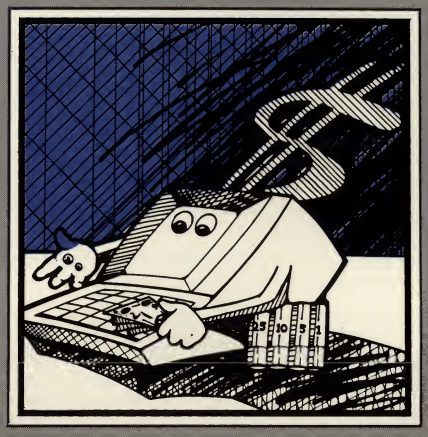
Steria's Teletel videotex software, known as Videopac, is already widely used in the French Telematique program and in videotex systems in Brazil, Kuwait, Italy, and the United States.

COIN-OP COMPUTING

Photocopying machines have been in libraries for years, but what about computers? Well, if the Micro Timesharing Co. of Salinas, Calif., has its way, computers will soon become as common a library fixture as books and overdue fines.

According to the company's 19-year-old owner, Kim Cohan, there's a big demand for such a service. So far, Cohan has installed 11 coin-operated computers in California libraries and finds himself hard-pressed to keep up with incoming orders. Micro Timesharing charges users one dollar for 20 minutes of computer use.

Cohan says his computers attract a wide variety of users. School children use the computers to do homework and play video games. During evenings and weekends, adults use the machines to balance their checkbooks and prepare home budgets. For people still learning the digital ropes, each terminal is accompanied by an easy-to-understand manual and an 800 telephone number that's staffed by computer problem-solvers.



Cohan got his start in the field two years ago while a college student in Malvern, Ark. Emptying his $600 savings account, he installed a Radio Shack TRS-80 Model III in a local library. While the machine made only $52 the first month, use soon picked up, and Cohan dropped out of college and headed home to California. Once there, he persuaded a Carlsbad library to install an Apple-compatible computer in return for five percent of the coin-box gross. Competing companies, however, soon offered sweeter deals, and the library's cut is now up to about 20 percent.

Still, the prospect of heated competition doesn't daunt Cohan. He has big plans for the future. Cohan sees coin-operated computers popping up in just about any location that attracts large numbers of people — hotels, shopping centers and airports. He also sees Micro Timesharing serving a large segment of that market.

FUTURE ENGINEERS: SHORTAGE OR SHORTCHANGED?

Will the future hold enough engineers to design, build and run tomorrow's computers? If the claims of the American Electronics Association prove to be true, the answer is "no."

Over the next five years, according to a recent AEA survey, American companies will need 113,500 more electrical engineers and computer scientists than colleges will produce. Only 84,000 new engineers will emerge from American universities, fully 57 percent short of the anticipated 1988 demand for over 197,000 new electronics and computer experts.

This shortfall is the ironic result of current demand. Engineering salaries in industry average $10,000 more than engineering schools' teaching salaries. Competition for high-tech specialists is so high that colleges simply cannot offer inducements large enough to coax today's specialists to teach tomorrow's engineers.

The AEA, a trade association for high-technology companies, bases their analysis on a survey of projected employment requirements in the electronics industry. "We had 815 respondents," says AEA spokeswoman Pat Hill Hubbard. "From that, and certain assumptions, we extrapolated the results. That 197,000 number represents all new jobs, not total jobs." In an effort to avoid the shortfall, the AEA established a $2.4-million fund to supply more teachers and administrators to various educational institutions.

But not everyone agrees with the association's estimates. The future shortage of engineers is the source of considerable controversy within the engineering community. At the storm's center is Irwin Feerst, founder of the Committee of Concerned Electrical Engineers.

"AEA represents their corporate clients," Feerst says. "Those clients have a vested interest in keeping salaries — and their costs — down." Feerst claims that the market for engineers is already flooded. "Salaries in constant dollars have been going down since 1969. If that's the sign of a shortage, then there's no such thing as the law of supply and demand."

Feerst also disputes the validity of the AEA survey methods. "They asked companies for projected employment needs," he says. "Well, those companies all answered based on the assumption that they'd get all the projects they're currently bidding for. A lot of those companies are bidding for the same projects!"

"I don't think Mr. Feerst's claims warrant a reply," Ms. Hubbard says. "He seems to think that there's no shortage unless engineers are averaging $50,000 salaries their first day on the job. We're not talking about a phony shortage of engineers. We're talking about real needs and real jobs."

— *Alex Krislov*

CHIPPING INTO VIDEOTEX

Three companies have announced programs and chips that can turn microcomputers and even color television sets into videotex terminals.

The new products cost as little as $100, a fraction of the price of a new dedicated videotex terminal announced for home use by American Bell. All three meet the new North American Present Level Protocol Standard (NAPLPS) planned by Knight-Ridder and Times-Mirror companies for their videotex services.

Among the new products:

•Avcor of Toronto announced a $99.95 program that allows the Commodore 64 to receive 16-color alpha-geometric graphics. Avcor President Robert Baum said the company can make immediate delivery of the programs in bulk and plans similar products for the TRS-80, Apple IIe, IBM PC and Digital Equipment Corp.'s Rainbow before January.

•Wolfdata of Chelmsford, Mass., has demonstrated a chip set that turns the IBM PC into a full NAPLPS terminal. At the Videotex '83 conference in New York last June, IBM used the same technology, priced at $300, to turn PCs into terminals for its videotex demonstration.

•Norpak Ltd. of Kanata, Ontario, announced a chip that can convert a color television into a NAPLPS terminal. The chip also can be used in a microcomputer. A full kit, including keyboard, will cost about $500.

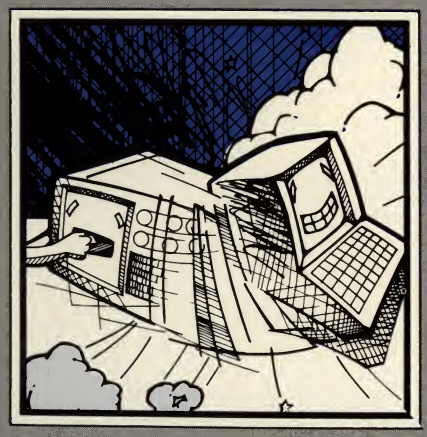
While not making a formal announcement, Digital used one of its professional level microcomputers as a videotex terminal in its booth at Videotex '83. Digital spokesman Philip Neray said the computer used a prototype of a product the company may announce later this year.

Baum believes his company's software "cracks the egg in the videotex industry's chicken-and-egg problem."

Industry observers have warned that companies seeking to create NAPLPS services may not be able to attract the advertising support they will need without a large audience. At the same time, they doubt that potential subscribers will be willing to buy an expensive terminal such as the $900 American Bell machine that was introduced at the New York videotex conference.

"Our programs will allow thousands of people who already own microcomputers to get NAPLPS at a small cost," Baum said.

"Surveys show that in the first year after the average person buys a microcomputer, he spends $600 for software," he said. "We're after some of that budget; we aren't selling new hardware. This will give the industry



an audience numbering in the thousands instantly."

Although the Avcor programs are the least expensive of the three alternatives, they also are more limited. The Wolfdata and Norpak chip sets allow full reception and display of the videotex signals, but the Avcor programs are limited by the hardware in which they are used.

Avcor decided to work with the basic microcomputer as it comes off the store shelf, with no special hardware modifications. The IBM PC, for instance, can either display sharp focus graphics in four colors or fuzzier graphics in 16 colors without upgrading, and Avcor's program will not change that. The Wolfdata chip, on the other hand, allows the PC to maintain high resolution with the full 16 colors per screen called for in NAPLPS.

— G. Berton Latamore

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MAN AND HIS MICRO-

by Carole Houze Gerber

"When a computer becomes part of a relationship with a human," says Pennsylvania State University communications professor Gerald M. Phillips, "it doesn't become more human. Instead, the human becomes more computer, because a computer cannot decide how to adapt."

Back when computer hobbyists were building machines from kits, engineers were about the only people brave enough to form relationships with the then mysterious hunks of hardware. But when the market for home computers was recognized, user-friendly machines were developed. And because adapting became easier, a varied group of humans decided to start relationships with micros of all makes and models.

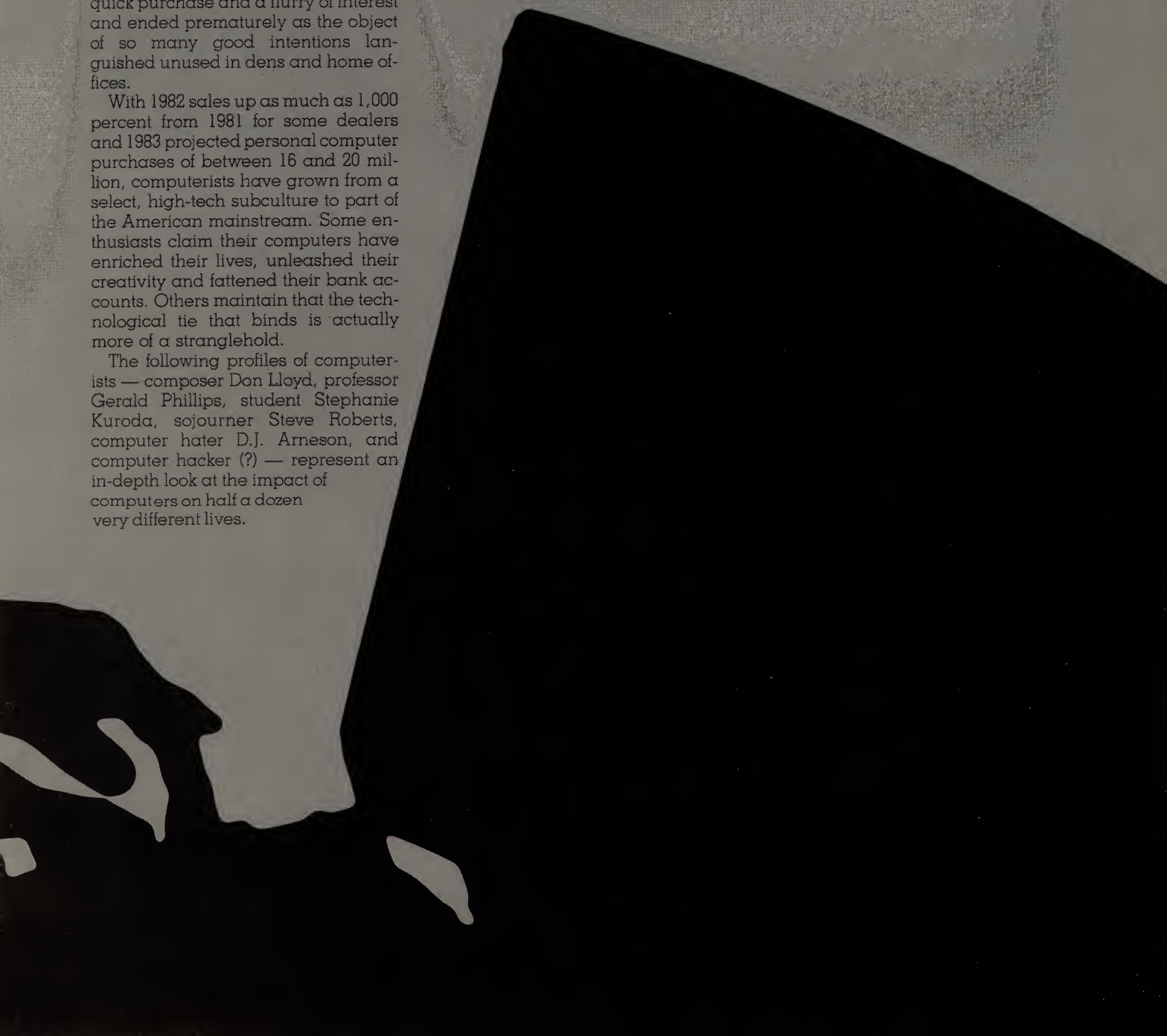
Some computerists were monogamous; early on swearing by their Apples or their TRS-80s, their Vectors or their IBMs. Like faithful spouses, their eyes might occasionally have flicked lustily over a well-turned keyboard or an attractive piece of software, but their loyalties remained steadfast. Others were promiscuous, eagerly

MAGNIFICENT NEW MACHINE

sampling the delights of many machines on regular Saturday morning treks to computer stores. Some relationships began passionately with a quick purchase and a flurry of interest and ended prematurely as the object of so many good intentions languished unused in dens and home offices.

With 1982 sales up as much as 1,000 percent from 1981 for some dealers and 1983 projected personal computer purchases of between 16 and 20 million, computerists have grown from a select, high-tech subculture to part of the American mainstream. Some enthusiasts claim their computers have enriched their lives, unleashed their creativity and fattened their bank accounts. Others maintain that the technological tie that binds is actually more of a stranglehold.

The following profiles of computerists — composer Don Lloyd, professor Gerald Phillips, student Stephanie Kuroda, sojourner Steve Roberts, computer hater D.J. Arneson, and computer hacker (?) — represent an in-depth look at the impact of computers on half a dozen very different lives.



Profiling the Computerist

George Olson

DON LLOYD: Composing with Computers

Take three notes from an out-of-tune piano. Digitize and store them on a disk. Write a short computer program to play the sound forward at half speed and backward at quarter speed simultaneously. Now, what do you hear? Cacophony, you say? But, no, it's composer Don Lloyd's "6-Bit Marching Polka."

"I know of no one besides myself who appreciates this little piece," he laughs. "I like it partly because it was the first experiment that showed I was on the right track in using a computer in my work — and partly because it sounds *exactly* like an unsteady short-wave reception of a live Mariachi band."

An instructor at the San Francisco Art Institute where he teaches courses on sound and the art of electronics, Lloyd has won a number of awards for his musical and film work — including a gold medal at the 1974 Cannes Film Festival. Through his studio, fittingly named "Lighthouse," he takes on free-lance assignments and creates pieces for audiences and for his own pleasure. His approximately 100 compositions, which range in length from 30 seconds to an hour, are based upon the mostly taken-for-granted sounds from the environment — croaking frogs, tumbling rocks, noisy automobiles.

"We're a visually-oriented society," Lloyd contends, "and seeing is believing. But if we hear something, it's 'probably just a rumor.' I like to work with turning that around through the ascendancy of sound."

His current work in progress reflects his sharp aural observations of the urban environment — it's made up of rhythmic machine sounds such as helicopter blades and old steam engines. "The original idea was inspired by a traffic jam on the Golden Gate Bridge," he explains. "It includes a series of harmonically related car horns syncopated by the enormous blast of a fog horn which happened to be directly below my car."

"I built a four parallel port I/O board and an A/D-D/A board," he says. "The A/D circuitry will digitize sound from any source — be it microphone, tape recorder, sythesizer, or whatever — and store it in computer memory where it can be manipulated just like words in a word processor. To accomplish that, I wrote a program that I call a 'sound processor.' The stored information can be turned back into sound via the D/A circuitry. The parallel ports can be used to trigger synchronized external events such as advancing a slide projector, blinking a light, cueing a performer, or controlling the tape recorders."

Although his music sometimes receives a chilly reception from academicians in music and the arts — "They may have completely aesthetic objections to electronic music as a genre, but I think their reactions have more to do with maybe feeling threatened by it" — the public usually greets his concerts warmly. "Audiences are becoming more sophisticated and are beginning to know what to make of this kind of stuff," he remarks. Still, many are more enthralled with technology than technique.

> "Using a computer has helped to unify four very diverse activities for me."

"What I'm experiencing now," he says with a sigh, "is quite similar to what happened twelve years ago when I first used a synthesizer in my concerts. One of the disappointments to me then was that a lot of people loved it just because it was electronic. They listened with rapt attention but not with a critical ear. I find a similar reaction to my current compositions because they're done using a computer. Whether it's good music or not seems to be beside the point. I'd like to get beyond that stage."

Lloyd describes his shorter pieces as light and playful and occasionally — as with the facetiously-titled "Punk Master" — as out and out jokes. The longer compositions reflect a more serious frame of mind, "though the elements making up the composition may be playful or reflective." The self-discipline needed for his work is rarely a problem, he admits, especially since he moved to Ft. Reyes, 40 miles from the exciting San Francisco arts scene, which used to pull him too frequently from his work. Now he commutes into the city two days a week to teach, schedules time to keep up with cultural events, and works in his studio the rest of the time.

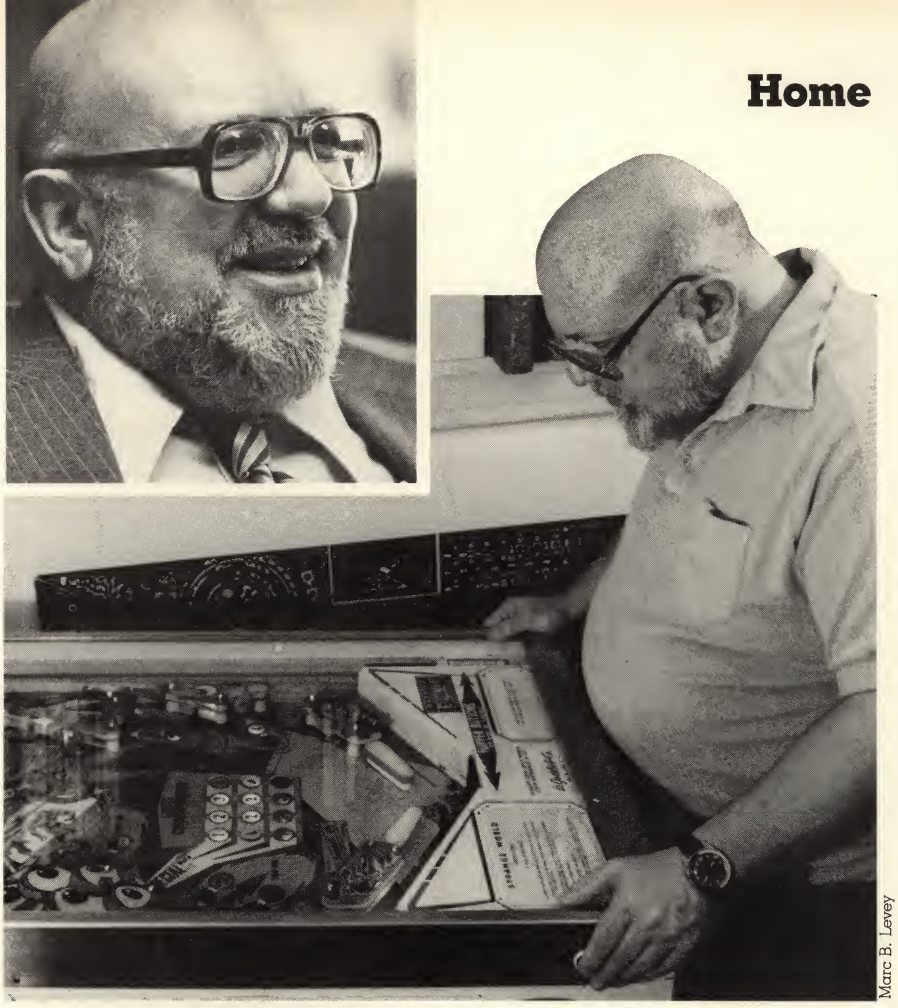
"Any artist has the continual dilemma of whether to sing or go to the opera," he says reflectively. "Almost always, I choose to sing."

Lloyd, whose compositions have grown increasingly computer-based in the past two years, says he is using a micro in his current piece "to maintain the integrity of the timing and to keep track of the various overlayed meters." To accomplish this, he wrote a short program to generate what amounts to "electronic frame numbers" on one track of the tape recorder. The computer reads these numbers to compute the metre of a given frequency range, and to insert a sound at precisely the right place in the recording to keep the rhythm.

"Using a computer has helped to unify what used to be four very diverse activities for me — composing music, editing film, computer programming, and writing," Lloyd says. "These activities are all time-based and are relatively linear expressions involving another person — the listener, watcher, user, or reader. My task in each of these is to present the original material in such a way that it makes sense to that other person."

That's where his trusty Z-80 S-100, equipped with a modem and printer, comes in. "The word processor model commonly used for writing and programming is easily extended to film and video editing, and produces marvelous results when extended to composing," he explains. "The payoff is that hard work in any one of these four areas sheds light on the other areas as well."

A computer hobbyist who has built several machines, Lloyd says he was initially reluctant to use computers in his compositions. "I knew regular analog synthesizers so well that it would, for example, take me only four minutes to produce a bell sound with an analog, but an hour and a half with a computer." When he began to realize along about 1980 that computers could help reshape his music (among other things, a computer-driven synthesizer works 100,000 times faster than an analog), Lloyd directed his considerable technical expertise to merging his technical and artistic talents. The result was two devices that simultaneously simplified his work and expanded his capabilities.



Marc B. Levey

GERALD PHILLIPS: Maintaining a Master and Slave Relationship

Gerald Phillips loves words. A communications professor at Pennsylvania State University and a writer on topics both mundane (he does ghostwriting for gynecologists) and magnificent (his latest book, co-authored with H. Lloyd Goodall Jr., is *Loving and Living*), Phillips rarely minces the tools of his trade.

"I think the bull in the world of computers is reaching such a critical mass that pretty soon we won't have a place to stand," he declares vigorously. On the other hand, he credits his computer with dramatically increasing his productivity. "If you get proper authority over this machine, it can reduce to almost zero the nuisance time in writing — the erasing, correcting, rewriting — the whole editing process, which most people do badly, is speeded up."

It has certainly worked for Phillips. Prior to "getting IBMed up to his ears," he produced 11 books in 20 years. Since buying his word processor in September 1981, Phillips has written two books and has three in the works, which he expects to complete by early 1984. "I have no aspirations to be a Hemingway or a Fitzgerald," he remarks. "I write to specifications, mostly textbooks or popular market self-help books, so the bulk of the writing isn't creative thought — it's sheer labor. I edit the work so it's in the proper language, make sure the ideas are in correct order, and fill in with good current and exciting examples.

"When you deal with this kind of writing," he adds, "a word processor does nothing to expand your mind or provide you with a consciousness-expanding trip. What it does is function as a slave and do all the arduous stuff for you."

Phillips, with the help of his wife who manages his writing career, has set up an extensive database system to draw upon for his work. The university, he says, provides "do-bees" who do his number crunching for him. "I could do it," he points out reasonably, "but it's really grunt work." Still, he doesn't rely completely on computers to handle the statistics he incorporates into his teaching, writing, and research activities. "I always feed in a model problem that I've done by hand to make sure the computer is coming out with the same answers I am. I know that computers make some very strange interpretations of human information," he says darkly, "and I absolutely refuse to have my findings

Profiling the Computerist

corrupted by some binary mind that really doesn't have the subtlety to understand what I'm doing."

He first got his hands on a rather large "binary mind" nearly 25 years ago when, in his typical aggressive and humorous style, he decided to take a look at what his technologically-oriented colleagues were up to. "I'm basically a humanist, but I don't enjoy anybody getting ahead of me. I didn't like 'science types' getting too big for their britches, so I went out and learned to program a big IBM 7090 mainframe that filled the whole world," Phillips says breezily.

> "I didn't like 'science-types' getting too big for their britches so I went out and learned to program a big IBM 7090 mainframe."

One reason that his present IBM model serves him well, Phillips believes, is because he's made it very clear who's boss. "I'm Simon Legree and that computer is an abject, groveling slave," he says dramatically. "I will not adapt my work to what it can do, and I'm perfectly willing to do things by hand.

"User-friendliness can be very deceptive," he warns. "It means you've got to do it the computer's way if you use programmed software. I will NOT share with IBM some of the delightful things I've learned to do with my system," says Phillips, who says he knows many people who are afraid of computers. "I have friends who are either terrified of the confounded things and won't go near them at all, or they buy computers and let them lay fallow."

Although the computer has served him well, Phillips is emphatic about his conviction that the machines aren't for everyone. In some cases, it's because some people lack the patience and ability to master them. "They buy them with high hopes and then discover it takes considerable effort to learn the systems and considerable practice to use them well," he asserts.

In others, it's simply because the computers aren't needed. "A lot of the advertising really is a crock. One company is now saying, 'Don't save money for your kid's education. Buy him a computer so he can learn now. . . . At Penn State, where we have about 60,000 students, they all get two days' training on how to use the computers available to them. That's what it takes for every student to learn the techniques and all the advantages."

For Phillips, the advantages are balanced by drawbacks. He now works at home on his word processor three days a week, and because of his extensive databases and home reference materials, has not had to make the trek to the library for quite some time. His work style is definitely more efficient, but his lifestyle is very different. "I've become much less social," he admits. "I'm very happy at home — it's like being in a cocoon. Sometimes I have to push myself to get out and be with people, and I don't engage in as much trivial socialization. That may be a good thing or a bad one, depending on what your needs are.

"I've talked with gregarious people who are very uneasy working at home because they miss the random and casual social contact that people learn to count on," he explains. "But I suspect the next generation will alter their interpersonal styles to accommodate to this."

Regardless of how well people adjust to, make use of, and accept computers, Phillips believes it's the creativity of human beings that will ultimately open up new vistas. "What we have to be very careful to do," he says firmly, "is preserve those wonderful, imaginative, inspirational, complex, unexplainable aspects of the great — partially random network set — of the human brain."

STEPHANIE KURODA:
A Balanced View

Known as "The Queen of Spas," Saratoga Springs, N.Y., located in the foothills of the Adirondacks, is a fine place to live. As the home of Skidmore College and summer home to the New York City Ballet and the Philadelphia Orchestra, it's a community that values education and the arts. The town motto, "health, history and horses," reflects the eclectic philosophy of its citizenry.

Seventeen-year-old Stephanie Kuroda, honor student, pianist, part-time fast-food waitress and, yes, computerist, exemplifies the community's well-rounded outlook. Computers, she says, will definitely be part of her future. But they'll be one part of an integrated, balanced life — certainly not the touchstone of her existence.

"I don't want to be a programmer," says Stephanie, "because I don't want to center my whole life around a computer. People have to remember that a computer is just a machine. It's an aid to learning, to making some kinds of work easier, and it's an aid in collecting information. But it's nothing to be afraid of. People need to be reminded that computers are just very sophisticated tools."

A relative newcomer to computers, Stephanie was taught the BASICs last summer during a two-week computer camp at Champlain College in Vermont. She went on to take an advanced course at nearby Skidmore College and practiced on her school's computers last summer.

Despite her fascination with the machines, Stephanie says she won't be using them for playing *Dungeons and Dragons*, or for crashing systems, or for any of the other activities that have given some teens a bad reputation. Kids in Saratoga Springs, she reports, are a pretty level-headed group. Hackers are frowned upon in her school, Stephanie says, and she was hard-pressed to think of any "War Games" type system-crashers in her neighborhood.

"There is one boy at school who arrives every day carrying his computer books," she says hesitantly. "He reads them all day and is close to being obsessed with computers. He's a loner, concentrating very hard on that

one part of his life and cutting himself off from the rest of the world."

While she has no intention of becoming entirely computer-centered, Stephanie has no doubt that computers will play a big role in her future. And although she has a strong interest in the arts — one of her first part-time jobs was making posters for a Skidmore professor — her major interests are science and math. Choosing a college will "most definitely" be based, she says, on the availability of computer courses for non-majors.

"Computers will play a big role in everyone's future," she says seriously. "They'll be part of all types of jobs, and I think students would be well-advised to get at least a little training, even if they don't think they'll ever use it. Computers are everywhere — even the cash register at the place I worked last summer was computerized. You don't have to be in a high-level job to come in contact with them."

Computers, Stephanie declares, are outstanding tools and a "real advancement" over many of the old ways of doing things by hand. They save time and money. They make life easier for people in hundreds of ways. And there's no reason, she points out, for people to think they can't learn how to use computers. Although schoolwork has never been a problem for her, Stephanie doesn't believe it takes a "superbrain" to master them.

"Determination is really the key," says Stephanie. "I thought it would be hard before I sat down and spent time on it. Once I got started and gained some confidence, it got easier and easier. I didn't know how to type and that slowed me down, so I'm taking a typing course, which should really help me do things more quickly."

> "Computers will play a big role in everyone's future . . . students would be well-advised to get a little training."

Keeping your mind on your work, she thinks, may be the biggest problem for novices. "It can be frustrating, and you have to pay attention. At first, you've got to keep reminding yourself not to let your thoughts drift. You've got to think logically and follow things through."

Stephanie is convinced that the biggest obstacle in mastering attacks of "computerphobia" — especially for those with short tempers and shorter attention spans — is human fallibility. "When you get mad and blame the machine for what went wrong, you might as well calm down and face facts.

Usually," she laughs, "it's nobody's fault but your own."

STEVE ROBERTS: Computing Across America

Just as the public is getting fairly blasé about the "electronic cottage," a new technological marvel has wheeled onto the scene that's sure to raise a few eyebrows: the "electronic bicycle." Ah, come on now — get serious.

Thirty-year-old Steven K. Roberts — inventor, author, and computerist extraordinaire — is very serious about his planned cross-country technological journey that should garner a gawk or two from more traditional travelers. Roberts is building and equipping a recumbent bicycle with two microcomputers and other assorted pieces of hardware that will make him, literally, both a tourist and an office on human-powered wheels.

A free-lance writer with three books and numerous articles to his credit, Roberts is negotiating with several publishers who want a book about his trip. His writing won't be limited to his on-the-road adventures, however. He plans to keep up his other free-lance commitments while traveling, including other books, magazine articles and marketing material for corporate clients.

Why the unique attempt to combine work and play?

"The whole trip offers an opportunity to test the viability of the information society," Roberts explains. "I want to see if I can maintain a heavily interactive, information-oriented professional practice involving a lot of clients, with an absolute minimum amount of paper — and complete freedom from the confines of an office. I'll exist in a totally asynchronous fashion."

A certifiable genius and self-taught engineer and software designer, Roberts' conversation alternates between hardcore engineering-ese ("From the standpoint of optimizing the efficiency of the interface, it's important to have a good impedence match between the body and the bicycle.") and an appealing free-spirit boyishness ("The trip sounds like a hell of a lot of fun that will combine all sorts of motives — adventure, meeting people, doing something bizarre, and having interesting material to write about.")

His interest in computers, he says, is rooted in a childhood fascination with

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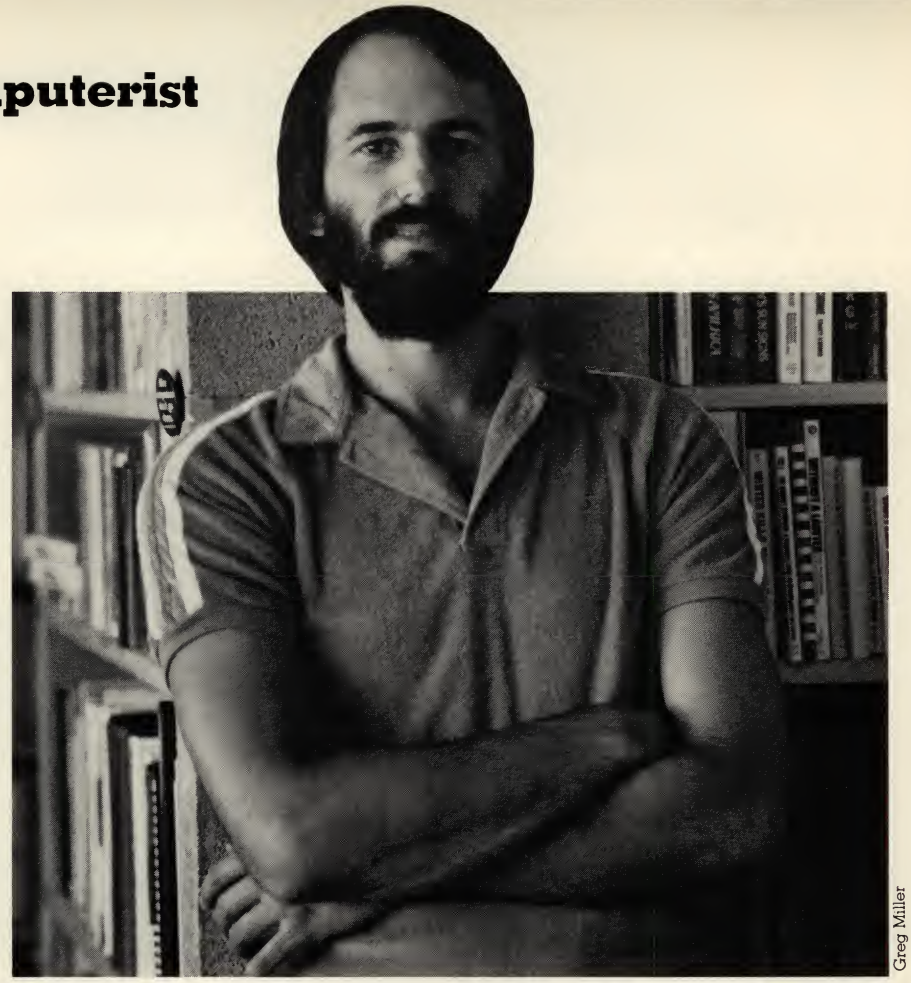

Greg Miller

electronics. After graduating from high school at the precocious age of 16, he had a "brief flirtation" with engineering school before leaving to spend a year on the road hitchhiking, biking and hopping freights. 'Just playing the harmonica, riding the rails — it was great."

But when he decided to return to his home town of Louisville and look for a job, he discovered corporate America didn't think much of his wanderlust and voracious appetite for self-education. "There was a world of knowledge I wanted to know, but I had decided there were more efficient ways than college to get it," Roberts explains. "The line I kept hearing was, 'Sorry, son, your lack of a degree is inconsistent with our standards of professionalism.' "

By 1973, he had developed what was then an unusual habit: an avid interest in computers. To support it, he started his own parts business, Cybertronics, which supplied integrated circuits to hobbyists. The proceeds were used to build his first computer, a project that "totally seduced" him, he says. Dubbed BEHEMOTH for "Badly Engineered Heap of Electrical, Mechanical, Optical, and Thermal Hardware," the machine, an 8008- based computer with an external stack and other TTL enhancements, was designed for practical as well as esoteric reasons. "I got tired of building separate machines for everything I wanted to do," Roberts explains. "I needed the generality of a computer for both speech and music synthesis, which were my passions at the time."

At this point, Roberts — one of the very few people in the country building home computers — was discovered by a Louisville television station when he and BEHEMOTH performed a Christmas duet. (Since BEHEMOTH lacked fingers and an interest in historical instruments, Roberts graciously agreed to play the baroque recorder while the computer hummed away on the synthesizer.) Suddenly, the very corporate types who had rejected him because he lacked a degree were calling with job offers.

One of them was a very tasty freelance offer from the Honeywell Corp. to write the environmental control software for a college campus' energy management system. "I made a lot of mistakes," he recalls, "but it was a good way to learn how to do a system design." It was also the break he needed to make it — at age 21 — as a highly-paid consultant designing custom industrial control systems for the likes of Corning Glass and other big companies. The next few years were busy and profitable ones. He went out of the parts business and for a while owned Louisville's only computer store. An admitted "information junkie," Roberts' self-education grew through trade journals and data sheets. The decision to write about what he had learned along the way was a natural one, and in 1977, he began to submit articles to hobby and trade magazines.

He discovered he enjoyed writing for a number of reasons — recognition, freedom, "conjuring something from thin air," — and decided to work into it as a full-time profession. By this point, he was tired of the consulting business and proceeded to have a mid-life career crisis a dozen or so years early. "I was sick of the engineering business by then," he recalls. "I had ruined my hobby, and I wasn't tinkering any more. All of a sudden I was just doing it as a business, and it was tragic. I got very depressed about it because building BEHEMOTH had

been such a passion.

"I realized that the feeling had gone away completely and that computers were just tools — cantankerous beasts that had to be beaten into shape for a customer by a deadline. The whole business," Roberts said sadly, "had lost all its charm."

> "I have one central conflict . . . and that's freedom versus security. This whole trip seems like the optimum tradeoff between the two."

But the appeal of writing hadn't, and Roberts proceeded — after a brief stint as a full-time employee with a Columbus, Ohio, firm — to make it a full-time career. The free-lance writing life, which includes regular technical writing assignments from corporations, has been a profitable, if sometimes uncertain one. "The corporate stuff provides steady income but no fame and glory," Roberts sighs. "The books and magazine projects offer lots of fame and glory but uncertain amounts of money. Doing both keeps the balance and pays the bills."

His bike trip, tentatively scheduled for late fall, will not, he reassures clients, interfere with his business. He will use the CompuServe network for communication and, of course, BEHEMOTH will be "alive" with an auto-answer modem — under the control of his manager. Roberts will take equipment to download files from pay phones to the waiting BEHEMOTH (which, by the way, is now BEHEMOTH 3 — a Multibus-based MICROMAX System 1000 built especially for him around a Monolithic Systems MSC 8009 card.) A Walkman-style radio will keep him company, and a mouthpiece attached to his helmet will enable him to dictate as he rides; he'll transcribe tapes as time permits onto his word processor.

Two computers — one to monitor time, speed, cadence and distance via liquid crystal display read-outs — and the other a word processor, will be part of his mobile office. He's tentatively planning to purchase the very small, very light, portable Model 100 by Radio Shack as his second computer. Obviously, equipment weight is a big factor. "There are so many power devices on this thing," he admits, "that it could take a lot of batteries — and batteries are heavy. So I plan to use one central battery with three ways to recharge it — a generator, a solar collector and a switching power supply that can be plugged in when I stop for the night."

To keep current on the technologies he writes about, he'll make extensive use of on-line information retrieval systems, college libraries and various conferences around the country. Along the way, he'll take time to visit friends and family. His sojourn is not a race, and — although it's a first — it's not a publicity stunt. It's an adventure, plain and simple — one that Roberts hopes will combine the best of two worlds.

"I have one central conflict that has plagued me all my life, and that's freedom versus security. This whole trip," he says with satisfaction, "seems like the optimum tradeoff between the two."

Steve will be visiting CompuServe subscribers all over the country for book and article material (as well as companionship). He can be reached at User ID number 70007,362.

D.J. ARNESON: The Official Computer Hater

"I know everything about computers — and they're no damn good," snarls D.J. Arneson, author of *The Offical Computer Hater's Handbook* (Dell, 1983). A prolific writer, Arneson has written more than 60 books in the past 15 years, including *The Original Preppy Jokebook* and a sequel, *The Original Preppy Cookbook.*

"I'm in the middle of preppy land," says Arneson, who lives in Southbury, Conn. "They're running up and down the streets — I see them everywhere. Preppies are much better looking than computers."

Dropping his pose as official computer hater, Arneson says that the book was done in good fun, and his chapter titles reflect his tongue-in-cheek approach. The book includes pointers on computer conversation killers, how to tell if your children are using computers ("Is their speech direct, unslurred and hard to understand?"), and an IQ test for computer game freaks. Arneson deals with the question of whether computers should be legalized, and addresses topics as diverse as the truth about E.T., microteens and computerniks, and details 101 uses for dead computers.

If you do give in and decide to purchase one of the "silent, gray-cased, one-eyed, twin-slotted, number-crunching things," Arneson advises you to be on guard against computer sales representatives. "They come in a variety of shapes, colors, sizes and mouth volumes," he warns, "but the one thing they all have going for them is that they know more about computers than sane people should bother knowing — and they'll tell you every miniscule, nit-picking, tiresome detail, right down to the name of the guy living on a mountain somewhere who wrote the ROM program that mysteriously guides the machine."

But despite the public's ignorance of computers, people who sell the things don't take advantage of the situation and tell lies. In fact, says Arneson, computer salesmen are sickeningly honest. Why? "Because they will bury you with facts so prodigious, overwhelm you with realities so incredible, and burden you with examples so profound that you couldn't doubt them if you wanted to because it all sounds

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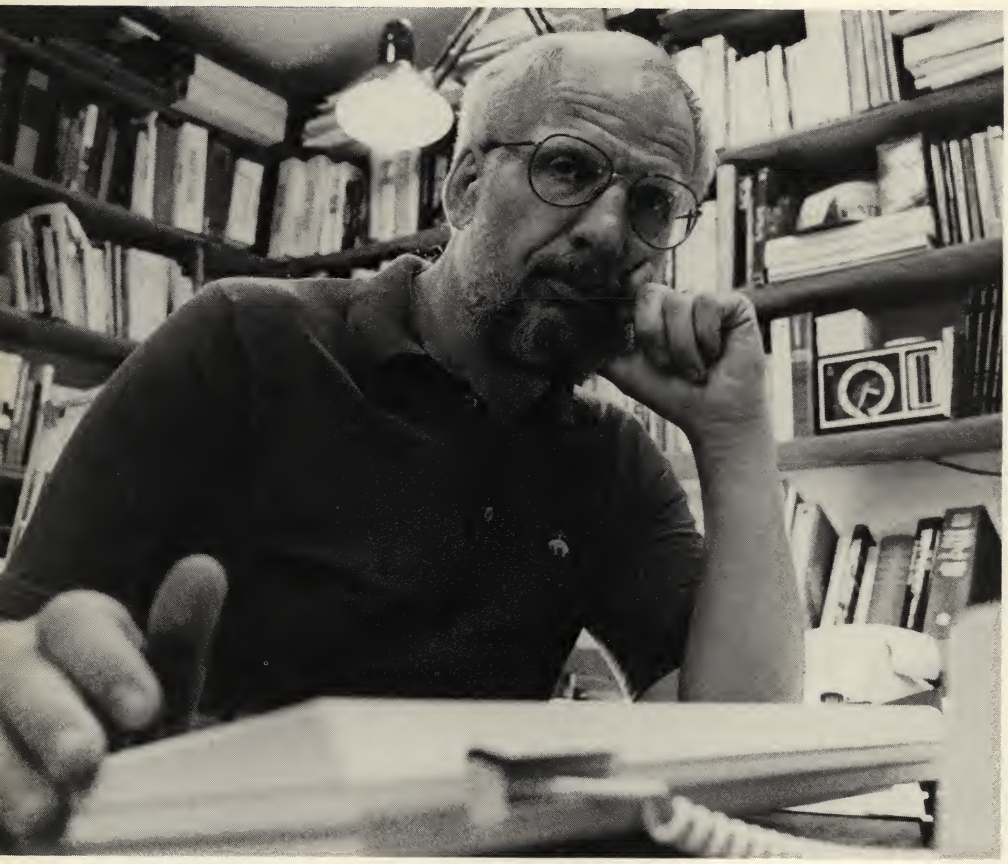


Garry Burdick

so good.

"You shall know the truth," he adds ominously, "and the truth shall make you dizzy."

There are four types of computer sales reps, explains Arneson, who says that most are male. First, there's the IBM clone — a college-educated (computer science, naturally), smooth-talking guy married to a systems analyst with a name company. "Don't ask the clone anything," Arneson cautions. "First, he knows the answer, and, second, he'll tell you. The clone is out of your league."

Then there's the polar opposite of the clone — the Woodstock waif. Arneson defines this breed as "very young, long-haired, borderline slovenly, dressed in jeans, running shoes and an open, plaid, cotton flannel shirt rolled up to the elbows." He's the kind of guy you'd be complaining about to management — if management hadn't hired him. Don't judge by appearances, urges Arneson, because even though he looks about 20, he's a genius. "He's already dropped out of more schools than you can name, but he's built his own computer out of Tinker Toy stocks and wire purloined from Ma Bell. He writes Defense Department programs that win and he'll sell computers because he needs the bread." Avoid him, says Arneson. He's friendly, but he can't help you because he doesn't understand that you're ignorant.

"You shall know the truth, and the truth shall make you dizzy."

Much less threatening than the Woodstock waif and the IBM clone are Mom and Pop. They're not threatening, says Arneson, but they are dangerous. Why? Because Mom and Pop probably don't know any more than you do. "Theirs is a converted candy store turned computer showroom," claims Arneson. "They're 'into computers' because they have a son in California who convinced them that they'd be the wave of the future. A hidden danger of doing business with Mom and Pop is that you'll feel sorry for them. Don't be sucked in by the homey atmosphere. Stay out of their store!"

The least appealing of the sales breed is the "anything salesman." This guy's dressed in double-knit polyester and wears gold chains instead of a tie. He's not into computers, warns Arneson, he's into selling — anything. "You may find the anything salesman in the computer section of what was a discount appliance store, which is now a discount appliance and computer store," snipes Arneson. "The anything salesman knows the jargon of computers and may even understand a little about them. He also knows that you don't know anything. If you hang around this fellow more than three minutes, you'll own a computer and a new dishwasher — and never know what hit you."

Not surprisingly, D.J. Arneson learned a great deal about computers while researching and writing his satirical book. And despite his "official computer hater" persona, he came away impressed. "My mind works very quickly," he says matter-of-factly. "I think it's perfectly suited to working with a word processor, as long as there's a word processor that's perfectly suited to working with my mind.

"I recognize that there's a lot of value in what computers can do," he admits. "In all honesty, I have no hard opinions against them. The book was done in good fun."

It was also, one suspects, done with the aid of — horrors — one of those awful machines. Arneson won't admit to any technological texting, but in the acknowledgements to "The Official Computer Hater's Handbook," he thanks Epson America Inc. "for the amazing Epson QX-10, a computer that's so friendly, it's a computer even an official computer hater can love."

Oh, the wonder of computers, hardworking and unbiased machines. They can be counted on to do so much. Even, it seems, to write nastily about themselves.

King Associates

THE HACKER:
A Humorous View

"Some believe hackers evolved from simpler life forms such as newts, salamanders, and bottom-dwelling slugs," says D.J. Arneson, author of *The Official Computer Hater's Handbook* (Dell, 1983). "Others suspect the hacker emerged fully developed from extraterrestrials and old math teachers. Whatever the case, there is complete agreement that the hacker is unique among creatures."

Gerald Phillips, a communications professor at Pennsylvania State University, holds an equally tongue-in-cheek view. "Hackers hide from human view," he says snidely. "Their challenge is mastering the machine, and their relationships with one another are entirely competitive.

"Hackers are anonymous," he adds facetiously. "They perform their devious tasks for their own satisfaction. Their tasks are pure logic — the machine could not care less about the reputation of the hacker, nor is it amenable to pathetic appeals like, 'I'll be frustrated, dear machine, if you don't let me penetrate your circuits.' "

Although penetrating circuits may be a joy to hackers, to non-technical types like D.J. Arneson, the official computer hater, it all looks pretty dull.

"A day in the life of a typical hacker is as exciting as waiting for a bonsai tree to mature or listening to Lawrence Welk records at 7 a.m. — or watching a hacker watching a hacker watching a CRT," he says with malicious humor. "Hackers are in their element at night, looking coolly through tiny, beady red eyes at the daylight drones who make the world go 'round."

All this is not to say that hackers don't occasionally talk to daylight types. Some are husbands and fathers so apparently have communicated at some time and at some level. A few have girlfriends, whom they take out late at night for pizza with all the trimmings. Most, however, speak computerese, a language that makes medical and legal jargon look like child's play.

In the event that a hacker marries you or your daughter or corners you at a cocktail party, you may want to be prepared with a few choice words of your own. The following sampling of tongue-in-cheek definitions, courtesy of D.J. Arneson's *The Official Computer Hater's Handbook*, will assist you in breaking the ice.

— C.H.G.

Access - A large, painful boil on the chips from too much computing.

ANSI - A hacker who can't sit still.

Batch - A minor gripe.

Buffer - A nude hacker.

Cold boot - What a programmer puts on feet in the winter.

Cursor - A hacker who batches a lot.

Disk Drive - A popular address in Cupertino.

Down - Said of computers made of feathers: "That computer is down."

End Users - Hackers who sit a lot.

Frequency - Disease suffered by video game freaks.

Gigabyte - A painful sting on the giga.

High-Level Language - An idiom spoken by hackers wearing tights.

Industry Standards - Nonconforming guidelines.

Joystick - A truncheon used by sadists.

Keypad - An apartment with a lock.

Line Feed - "I've never met anyone as interesting as you before," etc.

Machine Language - "Zoom, putt-putt, chug-a-chug," etc.

Night Mode - Computing in pajamas.

Ohm - Where the 'eart is.

Papertape Punch - A mushy drink that sticks to the roof of your mouth.

QWERTY - To be a little strange.

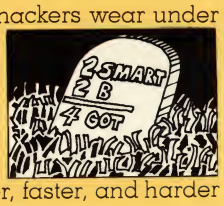
RAM - Where most of the bugs are kept.

ROM - Where you put all the bugs that won't fit in RAM.

Search Language - "Seen any good-looking word processors around here?"

Software - What hackers wear under their hardware.

Terminal Intelligence - To be so smart it kills you.



Ultrafiche - Bigger, faster, and harder to land than superfiche.

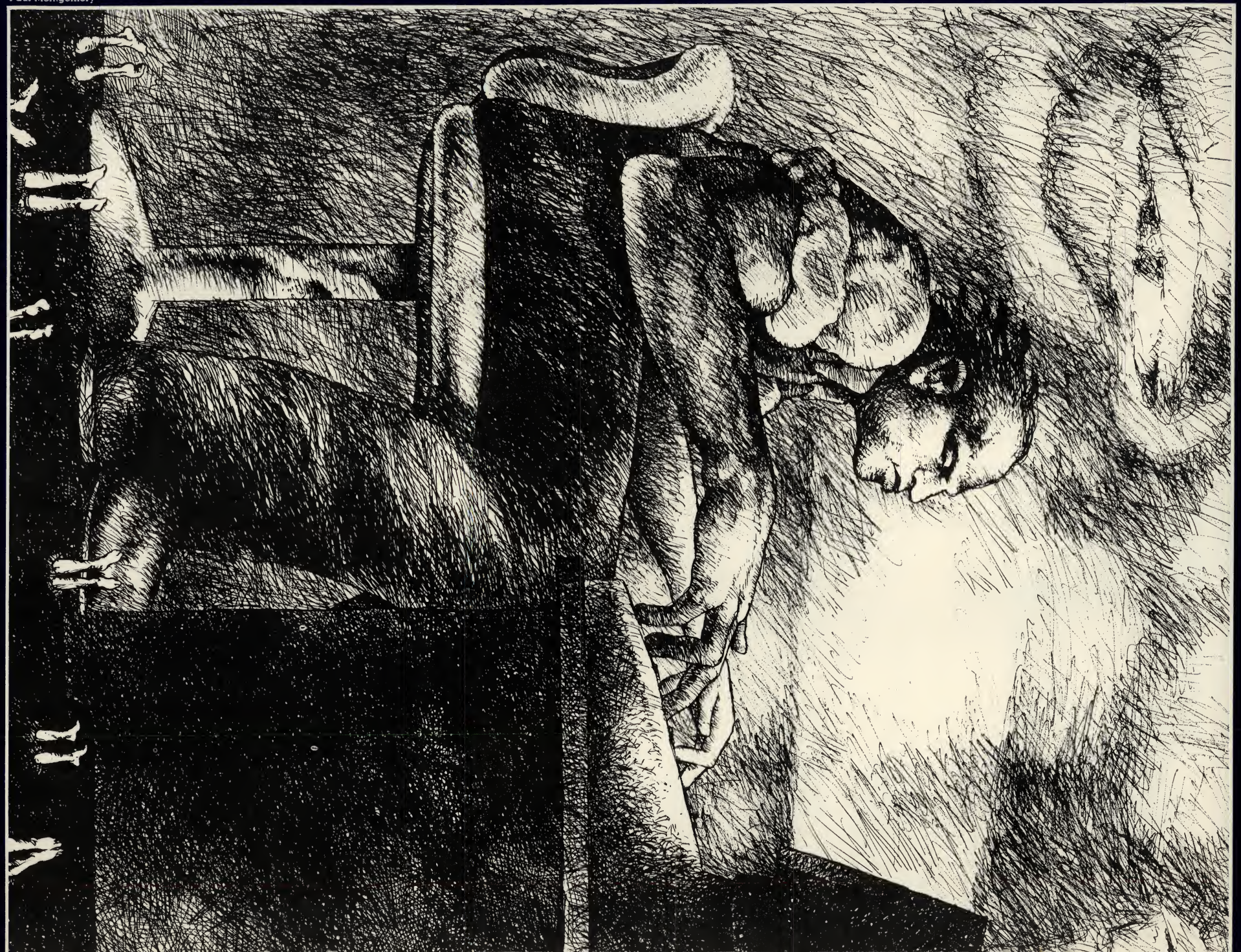
VIP - A very important peripheral.

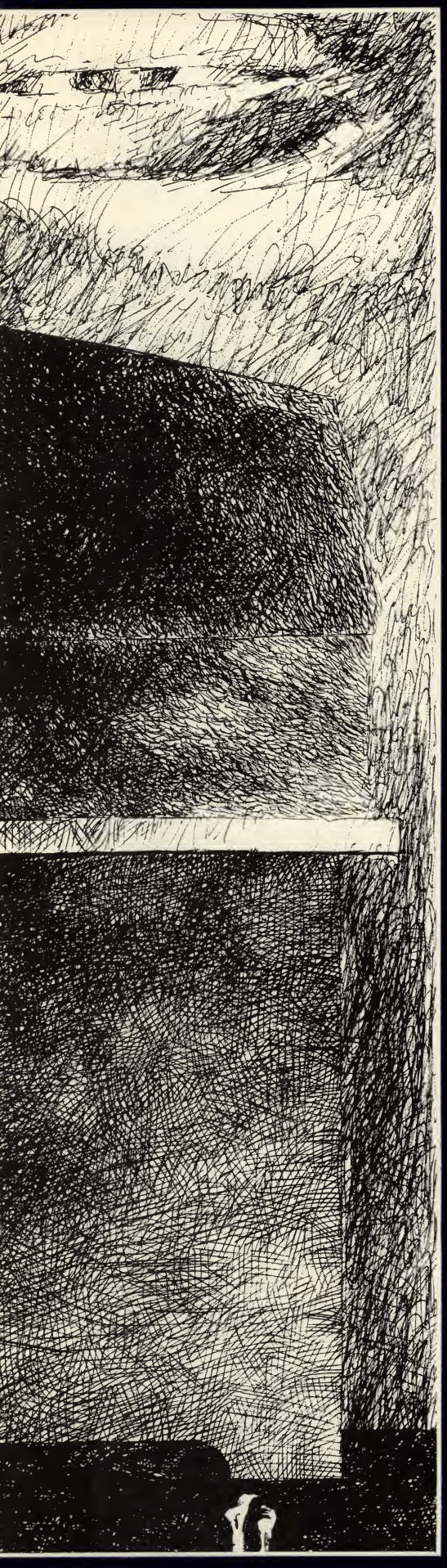
Wedged - Said of a computer with software tightly jammed between chips.

Y Punch - Fruit juice served in the steam room.

Z - end!

Paul Montgomery





INFORMATION SICKNESS:

A Disease of the New Technology?

by Carole Houze Gerber

"The presence of humans, in a system containing high-speed electronic computers and high-speed accurate communications, is quite inhibiting. Every means possible should be employed to eliminate humans in the data processing chain."

Stuart Luman Seaton, engineering consultant, in an address to the American Institute of Electrical Engineers, February 1958

From farm to factory to office, American workers have made the uneven but relentless trudge up the ladder of technology. Presently, half the work force is engaged in some way with the information industry. By the year 2000, according to a government forecasting agency, two-thirds of the population will earn a living, not by the sweat of their collective brows, but by creating, managing and controlling information.

What effect will this technological shift have on the mental health of Americans who, as a group, lionized the physical prowess of cowboy John Wayne and snickered at poor, skinny Mr. Peepers, stuck behind his desk? And, more importantly, how will we cope with the the plethora of information generated by this new age?

Coping with the overload

Some portray the workers of the not-too-distant future as happy, self-absorbed eggheads looking bug-eyed at their CRTs. Other observers believe that, although the computer revolution is definitely upon us, acceptance of what has been called the "age of information" will be slow in coming. A recent study prepared by the Trend Analysis Program (TAP) of the American Council on Life Insurance states that many non-technical people "recoil from the language of bits, bytes, . . . charts and modems. This . . . has fostered a degree of public fear and distrust of computer communications technologies, which are seen by many as dehumanizing."

The TAP study, which is used by insurance companies for industry planning, predicts that a byproduct of computer technology may be a new disease, "information sickness," caused by an overload of information. "As data pour out of the terminals," the August 1982 report states, "there is a longing for real information, for human judgment."

How people cope with such enormous amounts of data varies from individual to individual, but many people simply tune things out. And that, says futurist Edward Cornish, is a very sad thing indeed. "People often choose not to try to understand complicated information," says the president of the Washington-based World Future Society. "I think many individuals have a great deal of difficulty relating to complex problems, so they ignore them and instead look for simple things they can understand.

"The concept of information sickness due to an overload is a very valid one," he adds. "One of the greatest promises of the electronic media is that it's theoretically possible to provide a description of each individual's needs and then code that which goes into each person's information system so it's filtered to the correct people."

Cornish, who is editor of the nonprofit World Future Society's journal, *The Futurist*, and author of a number of books on the subject, says there is merit in trying to figure out what lies ahead in the Information Age. "The rapid rate of change makes it difficult for people to prepare themselves for tomorrow," he maintains. "It can lead to disorientation — and it's easy to see why."

Cornish points out that a person brought up a century ago would have a hard time coping in the world we live in today — a world of television, airplanes, changing attitudes, computers and advancing technology. "The pace of change keeps accelerating," he says. "And it can lead to disorientation or 'future shock.' "

While the psychological stress of handling information overload may become a problem for many, there is no biological basis for this condition. Dr. Robert Ader, a psychologist at the University of Rochester engaged in research on the interaction between the brain and the immune system, says the brain is capable of handling much more information than had been previously assumed. "There have been estimates that only a small percentage of our real capacities are normally used," he reports. "So one might say that the use of computers might actually prompt or stimulate advances in our own capacities, rather than overloading them." The larger issue, according to Ader, is that of reliance on technology. "The use of computers may dictate the nature of the problems we attempt to solve," he says. "If I've got a machine that will answer not only the question I set out to answer, but will answer questions I haven't even asked, I might be tempted to get that information because it's 'free' — not because it's relevant."

The relevance of the information generated by the new technology is a concern that few people have thought about, says Michael Marien, editor of *Future Survey*, a monthly abstract of trends, forecasts and proposals. "Despite the communications revolution, there's little communicating going on," insists Marien, who has read and written summaries of more than 5,000 books and articles since 1979 when he became editor of the monthly abstract.

'Age of ignorance'

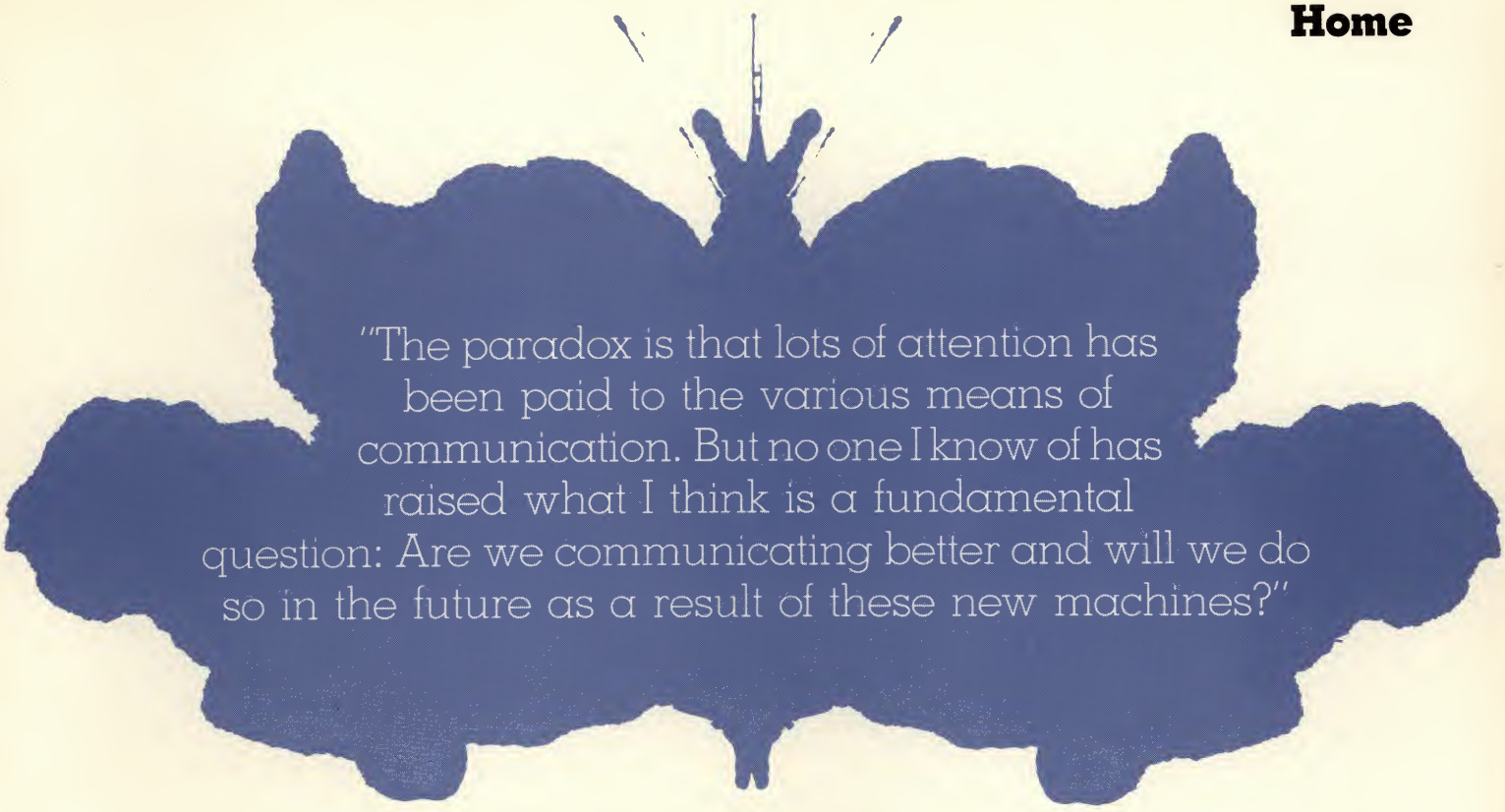
Marien, surely one of the best-read individuals anywhere, has read, digested and summarized information on a stunning array of topics including world futures, international relations, defense and disarmament, the economy, the environment, health, science and technology, and much more. He explains that *Future Survey* is a "rudimentary prototype" that attempts to dip into and abstract the vast amount of literature published about public affairs.

"The paradox is that lots of attention has been paid to the various means of communication," he explains. "But no one I know of has raised what I think is a fundamental question: Are we communicating better, and will we do so in the future as a result of these new machines?"

Overall, Marien thinks not. And he frets that not only are people communicating less effectively, their general capacity to "use information" — as he so delicately puts it — is declining. "People are getting more ignorant," he says flatly. "Ignorance is a condition of just not knowing — and if there's a lot to know, we're becoming more ignorant because more data is being spewed out.

"For 10 years, I've been saying we're living in an age of ignorance," he declares, "not just in the United States, but in the world. Our learning needs are outdistancing our attainments. That doesn't mean we're dumb. But the criteria for living in the type of society we're in — the definition of literacy — is rising for the average citizen. A hundred years ago being literate meant you knew how to write your name. Today the concept of functional literacy means much more, and it's becoming fashionable to say we must become computer literate as well."

Marien views effective communication as a problem-solving tool and points to what he calls the country's two major problems, the arms race and the economy, as "Towers of Ba-



bel" situations which have generated a lot of information — perhaps even an overload — without solving anything. Few would disagree with his contention that nuclear war is "the ultimate form of noncommunication," and that the relationship between the United States and the Soviet Union has declined over the past decade. "This is in spite of the growth in the past 10 years of all the technologies that supposedly enhance communication," he points out.

The enhancement of communication is not an aim that sets well with many people who prefer to do things the old way. Some news reporters, for example, clung to manual typewriters long after electric ones had been shown superior. Now that terminals have supplanted typewriters in most newsrooms, a few diehards refuse to use them. Many people simply fear change and will go to great lengths to avoid it. And while many are fascinated with the possibilities of technology in the information age, many more — as the TAP report pointed out — are suspicious of it. This distrust of information age technology was foreshadowed at the 1939 New York World's Fair.

Promoters of "The World of Tomorrow" exhibit claimed the event was "a crystal ball that invites the peoples of the world to contemplate the marvels wrought when the genius and labor of man unite." A record 45-million visitors traipsed through the Fair, gaping at what the future might hold. To some visitors, however, the marvels wrought by a primitive computer that answered mathematical questions was more genius than they could handle. Many were unprepared for the speed with which the interactive exhibit responded. Some were merely startled, others were frightened, and a few went into states of temporary shock. According to fair records, the exhibitors — concerned that the public would avoid the computer display — put in some extra relays so the answers wouldn't come out so fast.

Arnold Brown, founder and first director of the Trend Analysis Program of the American Council of Life Insurance, considers himself an "old timer" in the fields of futures research and long-range planning. And he's not a bit surprised with the problem many people have coping with the Information Age. Brown is currently president of Weiner, Edrich, Brown Inc., a New York City consulting firm dealing with strategic planning and the management of change.

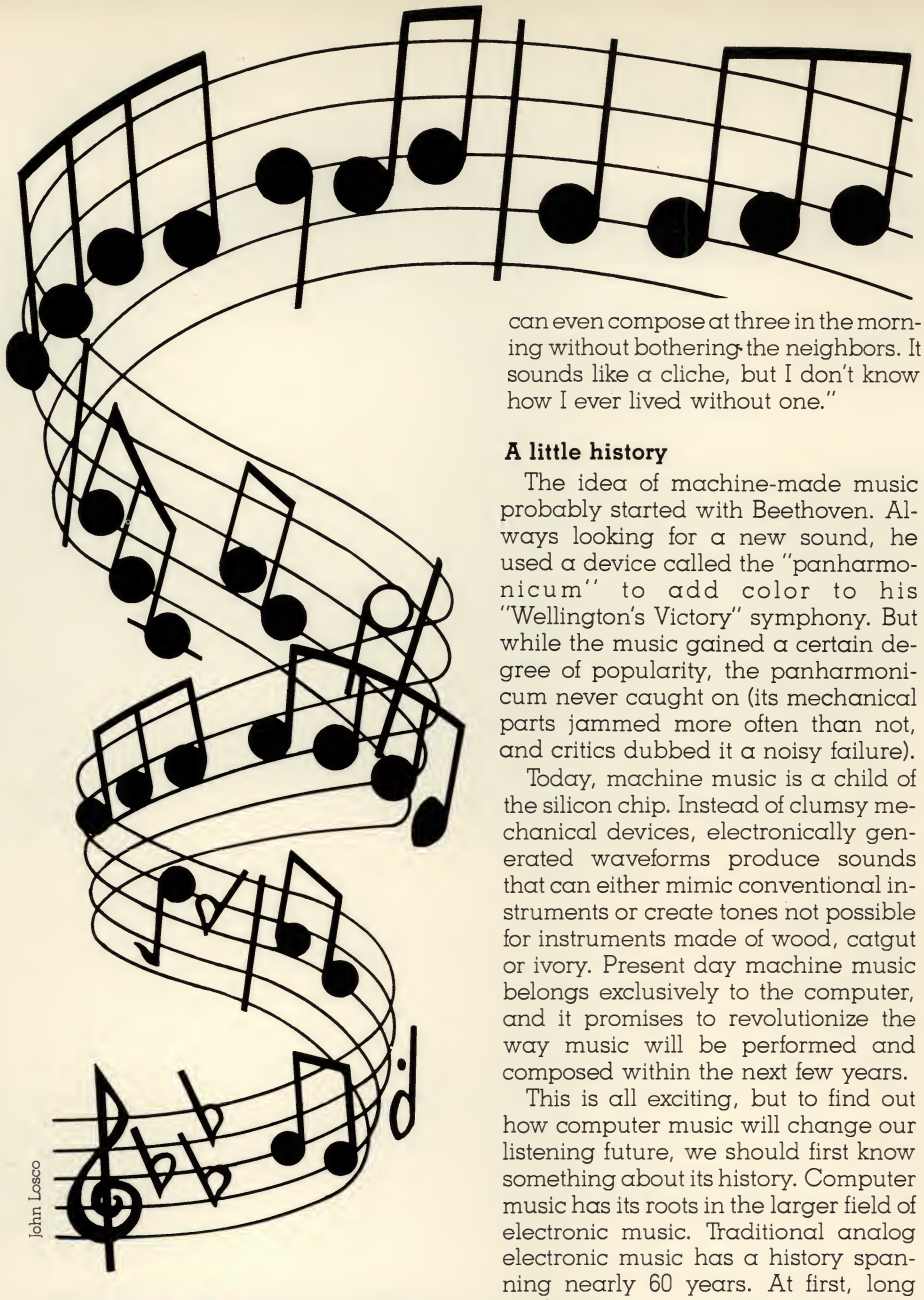
"Underlying our problems is the nature of the kind of information we are dealing with," he explains. "It is about change, and most people usually perceive change as threatening. Even change that is quite clearly positive contains some element of uncertainty, and this unsettles people."

Not only does technological change unsettle people, it usually leaves behind those unprepared to cope with it. And that, says Dr. Stephen Stern, a psychiatrist at the Ohio State University Depression Clinic, is the real tragedy of the shift from an industrial to an information society. "People who are left behind are at increased risk for depression and other psychiatric problems," he says. "After a few years of unemployment, there's an increase in general mortality from all causes."

The leading environmental cause of depression, according to Stern, is unemployment and resultant financial problems. Most people base a major portion of their identity on being productive members of society, he says. And aside from the loss of money, those who lack the skills to cope with the Information Age often take their inability to cope with the changing employment environment as a major ego blow.

For those not even in the running, coping with an overload of information might well be a welcome challenge. Arnold Brown has written that the people who control information — control access to it, control understanding of it, control interpretation of it — are the people who will be the gatekeepers of power in the new age.

Carole Houze Gerber is a contributing editor of TODAY.



John Losco

MAKING MUSIC ON THE MICRO

By John Edwards

"Oh my goodness, that doesn't sound right. Let's try it this way," says Jon Southby, hovering anxiously over his computer.

Paper litters the office. In the corner, a console piano is covered with computer printouts and other notes. "I use the piano as a backup," Southby says with a smile. "It's really sort of a relic for me."

Southby belongs to a new breed of musicians, those who have given up composing on conventional instruments and use a computer instead. A slight man in his late twenties, Southby almost hides behind his full beard as he explains why he started using computers.

"It's a lot better than a piano or a guitar," he says. "It's the most flexible way of composing ever devised. A tune comes into my head, and as I punch the notes into the keyboard, it automatically plays the music back. Then, as soon as I've got the basic melody down, I can immediately arrange, transpose, play it at a variety of tempos — do almost anything — even check to see whether I'm putting the correct number of beats in each measure. All in all, it's a great time-saver in a profession where deadlines are a big pressure."

Southby works in what he calls the "business music" field. From his home in Minneapolis, he writes commerical jingles, TV theme songs and film scores.

"Compared to the days when I was buried under mounds of sheet music, unable to find anything, my little microcomputer is a godsend. It remembers everything I tell it, and I have virtually instant retrieval."

At the heart of the system is an Atari 800 computer and its companion Music Composer program. Other gadgets have been added, including a color monitor, a disk drive and a dot-matrix printer.

"The system isn't all that expensive," notes Southby. "And that's why it's great for people just starting in this field. Look at it this way. Up until now, young composers needed a piano to work on. For most of them, a new piano is way out of their budgets and even with a used one — you ever try fitting a piano in a small room or apartment? A basic microcomputer costs under $1,000, and you can put it anywhere. Slip on a pair of headphones, and you can even compose at three in the morning without bothering the neighbors. It sounds like a cliche, but I don't know how I ever lived without one."

A little history

The idea of machine-made music probably started with Beethoven. Always looking for a new sound, he used a device called the "panharmonicum" to add color to his "Wellington's Victory" symphony. But while the music gained a certain degree of popularity, the panharmonicum never caught on (its mechanical parts jammed more often than not, and critics dubbed it a noisy failure).

Today, machine music is a child of the silicon chip. Instead of clumsy mechanical devices, electronically generated waveforms produce sounds that can either mimic conventional instruments or create tones not possible for instruments made of wood, catgut or ivory. Present day machine music belongs exclusively to the computer, and it promises to revolutionize the way music will be performed and composed within the next few years.

This is all exciting, but to find out how computer music will change our listening future, we should first know something about its history. Computer music has its roots in the larger field of electronic music. Traditional analog electronic music has a history spanning nearly 60 years. At first, long banks of audio oscillators were linked together to produce tones. To vary the oscillator's frequency, the performer would manually turn a knob to change the pitch. The system worked, but the results on early systems were often a long way from music.

As technology advanced, so did electronic music. Envelope generators provided clear articulation of notes, transistorized oscillators generated steadier tones, and automatic sequencers allowed strings of notes to be repeated without manual control. Filters, ring modulators, phase shifters and other existing devices appeared and were all quickly assimilated into electronic music systems.

Analog electronic music reached its zenith during the 1960s when Robert Moog invented his electronic music synthesizer. In one unit were all the components needed to produce quality electronic music. Almost overnight,

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universities began teaching electronic music theory and technique, and record albums featuring the Moog shot to the top of the charts.

But electronic music was still limited. Only one line of music could be played at a time; sound patterns were relatively simple and the synthesizers themselves were very expensive and cumbersome to use. Something better had to be found.

Enter the computer

The answer, not surprisingly, was digital. With the development of microcomputers and microprocessors in the late 1970s, electronic music systems that used to fill an entire studio could now be placed on a desktop. The specialized and costly analog devices needed to modify sounds were quickly swept aside — such "noises" could be created digitally with superior results in a fraction of the time. The age of machine music had finally arrived.

Today, music composition programs are available for virtually every brand of microcomputer. Inexpensively-priced and extremely powerful, these software packages can not only help the professional musician assemble scores quickly and easily, but aid students and casual music enthusiasts as well.

While many approaches are offered to generate music on a microcomputer, all inexpensive composition packages have one thing in common: They use the computer's keyboard for data input. This has its good and bad points. While a computer keyboard may be easier for music novices to handle (all music programs allow users to enter notes at their own speed, then play back the music at a variety of speeds), many experienced musicians may find the method disconcerting. One way in which packages do differ, however, is in the way they display notation. For instance, Atari's Music Composer places notes on a pair of music staffs. Other packages, such as SubLogic's Music Maker, displays notes and other information in the form of a program listing. Yet another approach, offered by Atari's Player Piano, is to show a top view of a piano keyboard with a note symbol that flashes across played keys.

Sound quality can vary widely between programs. Atari packages make extensive use of the computer's built-in sound chip to offer high-fidelity music over any television receiver. Users of other computers will hear their creations played through either their machine's internal speaker or through their home stereo. As might be expected, systems that play through a stereo sound much better than those that output to a computer speaker. Consult the accompanying chart for a listing of some of the currently available music composition programs.

The ARP Odyssey, a traditional analog music synthesizer. Note the row of oscillator controllers just above the keyboard.

ARP's PRO-DGX: A microprocessor-controlled music synthesizer

Systems for performers

While personal computers can generate tones good enough for a composer to use, they're not the sort of thing people would pay money to hear. To play a finished product, a performer needs an advanced instrument. This instrument must not only provide the artist with a full range of sounds, it must also be convenient to use. With these two goals in mind, a new generation of digital music synthesizers has been developed. Like their analog ancestors, these units aim to break new ground in musical sound, but in the execution of this task, they're also light years ahead of anything ever seen.

Typical of this new generation of computer instruments are the Touche by Buchla and Associates (P.O. Box 5051, Berkely, CA 94705) and the ARP (320 Needham St., Newton, MA 02164) PRO-DGX. Both instruments are analog synthesizers married to a microcomputer. In the case of the Touche, 24 digital oscillators can be combined to form up to eight different lines of music (like playing a separate melody with eight of your fingers). FOIL, a specialized music language does everything from varying sound characteristics on each individual note to accessing one of the unit's 32 conventional instrument sounds. The PRO-DGX has many similar features.

Other Touche features include partitioning, which allows the user to play an instrument sound with either hand; time scaling, which automatically sets tempos without affecting pitch; and touchpad data entry for precise control of pitch, articulation and music editing. For monitoring, the unit can be connected to a video monitor to provide a continuous readout of all instrument functions.

Both Touche and the PRO-DGX feature a standard, organ-like keyboard for control. Even though they're capable of mimicking a wide variety of instruments, there's no need for a computer-controlled synthesizer to be shaped like, say, a clarinet or a violin — those instruments derive their shapes from the tones they produce. Since a computerized instrument can create any sound imaginable (theoretically, at least), it should give a performer the most comfortable method of control — hence, the keyboard.

For all they can do, instruments like the Touche and PRO-DGX are only the beginning of an exciting musical breakthrough. There are more advanced instruments in the pipeline promising more oscillators, more control circuitry, more available lines of music, more built-in sounds and more detailed monitoring capability — the list of "mores" is almost endless. In fact, as these units become increasingly sophisticated, and the technolo-

gy more accessible to musicians, listeners will hear fewer conventional instruments and more computer instruments. Listen around your radio dial, and you'll soon discover that the vast majority of rock and pop performers are already using digital instruments as an integral part of their music.

Into the future

What does the future hold? Computers and music software packages will continue to evolve, presenting both musicians and music lovers with an ever-greater variety of sounds. Perhaps most exciting — or frightening — is the possibility of computers eliminating the human factor from music altogether. So far, that's still the stuff of science fiction. At best, all our most sophisticated computers can do is select notes at random from detailed program guidelines. This computer-generated music still tends to sound as if it were the result of a roll of the dice — very disjointed, no discernible melody. There's also the question of who is actually writing the music, the computer or the programmer feeding it the rules.

But who can really say what will happen. Ten years ago, who would have predicted that many of today's composers would be using computers as a music-writing tool? Maybe, someday down the road, composer-programmer and computers will team together to write the hits of the 21st century. Then, in some faraway hall of fame for songwriters, we'll see the names inscribed in marble — Rodgers and Hammerstein, Lerner and Loewe, Lennon and McCartney, and Southby and Atari 800.

Who can say?

John Edwards is a free-lance writer from Glendale, NY.

Some popular music composition programs

•Apple II, II Plus, IIe:

Electric Duet, 48K disk, $29.95, Insoft, 10175 S.W. Barbur Blvd., #202-B, Portland, OR 97219

Music Maker, 48K disk, $49.95, SubLogic, 713 Edgebrook Dr., Champaign, IL 61820

•Atari 400/800/1200:

Music Composer, cartridge, $59.95, Atari, P.O. Box 61657, Sunnyvale, CA 94086

Player Piano, 40K disk, 24K tape, $22.95, Atari Program Exchange, P.O. Box 3705, Santa Clara, CA 95055

Musical Computer, 40K disk, $15.95, Atari Program Exchange, P.O. Box 3795, Santa Clara, CA 95055

•Radio Shack Color Computer Music, cartridge, $29.95, Radio Shack, Fort Worth, TX 76102

•Texas Instruments TI99/4A, Music Maker, cartridge, $49.95, Texas Instruments, P.O. Box 10508, Lubbock, TX 79408

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WHAT HAPPENS WHEN YOUR COMPUTER NEEDS REPAIRS?

by William Joseph

Photo courtesy of TRW

Healing sick computers: An explosive multi-billion dollar market

There are any number of not-so-subtle signs that will let you know when the honeymoon is over: A key on the keyboard that won't come unstuck; a tiny wisp of acrid, black smoke rising gently from the general area of the power supply; a disk drive that refuses to let go of your favorite disk . . . . You get the idea.

Like the groom who snores or the bride who coats herself from the neck up with a slippery cream just before bedtime, microcomputers are not above a few surprises of their own. The more you know about them in advance, the better your chances for a long and peaceful life together.

Repairs are not a happy subject. Most of us do not take kindly to the idea of paying for intangibles — and repair service is about as intangible as you can get. After all, when the repairs have been completed, all you have to show for your money is the same product you had before all the trouble started. And don't forget the inconvenience. When something needs repairs, it can't be doing whatever it is that you bought it to do.

Is it any wonder, then, that the subject of service hardly ever comes up in conversations between computer salespersons and prospective buyers? If the prospect doesn't bring it up, the salesperson certainly won't. Why bring up an unhappy subject during such a festive occasion? Perhaps your new computer will go on forever without the need for service.

Not likely.

The fact is that today's microcomputers can and do fail, sometimes with disheartening frequency. Now, don't get me wrong. Solid-state technology is remarkably dependable, unbelievably so when compared with its forebears.

The earliest electronic computers were made up of tens of thousands of switches, vacuum tubes, and resistors, many of which suffered lifespans that were measured in hours instead of months or years. Compared with those behemoths, your new micro might seem immortal.

But it isn't.

While solid-state circuits are the most trouble-free form of electronic technology known today, they're not foolproof. And, of course, there are the non-electronic parts of your computer system. Disk drives and printers are basically electro-mechanical devices. As such, they will probably be the source of most of your service problems.

Is all of this good reason for you to become paranoid about the inevitability of a service disaster certain to be visited upon you without warning? Certainly not.

Given reasonable care, your microcomputer system should give you an abundance of trouble-free service. On those occasions when you do need the help of a service technician, your own savvy about the service business should keep you from developing an urge to fling yourself in front of a bus. Here are some things you ought to know about what happens when a microcomputer conks out.

It's a big business

There are a lot of people out there who would like to repair your computer. The explosive growth of the computer industry in the last couple of years has created an aftermath of awesome proportions — one large enough to attract some of the biggest names in American business. While estimates of the size of the repair industry range all the way up to an unlikely $50 billion annually, there is not doubt that it is a multi-billion-dollar market growing so rapidly that credible figures are still hard to come by.

Computer service organizations may be divided into two broad categories. First, there are those that service

only computers sold and/or manufactured by the parent company. Radio Shack and IBM are two examples of this type. Then there are the burgeoning numbers of so-called third-party service organizations. These are generally independent of any manufacturing or selling functions; they exist solely for the purpose of repairing computers sold by other people.

Let's talk first about dealer/manufacturer service because that will normally be the first type that a new computer owner will encounter.

If there is a pioneer in the establishing of a network of company-owned and operated service facilities, it has to be Tandy Corporation's Radio Shack Division. Radio Shack opened their first company-owned microcomputer repair facility in August of 1977. At that time, most people had never heard of microcomputers. Today, the company operates 287 computer repair facilities in the United States and Puerto Rico devoted exclusively to servicing Radio Shack products.

Bud McLure, vice president and director of service operations for Radio Shack, points out that all of their technicians receive introductory training at their home locations, followed by intensive training at the company's world headquarters.

Says McLure, "The training at the home location is relatively informal, mostly just following a technician around and watching over his shoulder. At headquarters, though, our training is formal and intensive, lasting about six weeks for a bench technician and three weeks for a road technician."

McLure points out that companies such as IBM, NEC, and Apple provide their service primarily through authorized dealers, while Radio Shack takes the entire responsibility for service and sales.

While it is true that IBM is still relying heavily on authorized dealers to provide service for the IBM PC, the company has recently built 15 company-owned regional service facilities for what they call Level II service — problems that can't be resolved at the local dealers' service shops. Also, in an apparent effort to make up for a slow start in providing carry-in service in IBM company-owned facilities, the company has opened more than 100 carry-in service centers strategically located throughout the country.

"Carry-in" service at Sorbus Station: A battle of the giants in the third-party maintenance war

Over at the other end of the computer service spectrum, the so-called third-party service organizations are no less active. According to John Harnett, vice president of TRW, customer service division, computer service is now a multi-billion-dollar market and growing every day. TRW, a high-tech company that is already well established in the repair of big computer mainframes, is now positioning itself to be one of the leaders in third-party service for micros.

According to Dave Gill, manager of marketing communications for TRW, the company is already the largest third-party service organization in the industry with 200 service locations and 2,800 computer technicians and support personnel scattered around the country.

"Many small computer owners," Gill says, "have never heard of TRW, and many of those who have don't know that we service small computers. We've been the best kept secret in the industry up until now; but we intend to change that, starting right away."

While he declined to give specifics, Gill says that the company is planning national advertising aimed at the small computer owner.

At the moment, the other half of the battle of the giants in the third-party maintenance war is the Sorbus Service Division of Management Assistance Inc. According to Vice President

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FLIP-IT works!™

Rich Leonowitz, Sorbus will provide on-site service almost anywhere in the country. In addition to some 160 locations from which the company will dispatch technicians for on-site service, they are busy opening "carry-in" service stations at strategic locations throughout the country. Called "Sorbus Stations," these facilities are designed to woo the small computer owner who wants to save the expense involved in having the technician come to the computer.

According to Leonowitz, "The bulk of the computer maintenance business is still in the big mainframes, but the micro industry is a young and growing market and we intend to be the dominant third-party service organization."

By all appearances, though, dominance of the market isn't going to be easy for anyone. Says TRW's Dave Gill, "There's going to be a lot of big league competition for the microcomputer service dollar. Lately we've learned that companies such as RCA, GE, Honeywell, and Western Union are rushing into the third-party service market."

And they aren't the only ones. The Xerox Corp., which already has a nationwide service organization operated soley for the repair of the company's own products, has recently announced its entry into the third-party market. Says Xerox Vice President William T. Blair," . . . . Most manufacturers of personal computers lack the service capability necessary to support their products adequately. Xerox, on the other hand, has one of the largest and most highly regarded service organizations in the world."

Xerox, with 82 walk-in service centers already in operation around the country, sees the third-party service market for microcomputers as a major new business opportunity for the company.

Who is going to do it?

As I hope you can see by now, "Who is going to do it?" is a very important question — one you should ask before you need help. While it is certainly true that a lot of good companies are positioning themselves in the computer service market, the industry is still very young. There are also a lot of incompetent, if well-intentioned, people involved.

Horror stories abound, like the experience of small business man Ron Copeland who blew nearly $1,000 with three separate dealers trying to get what turned out to be a relatively simple repair job completed. When he finally found a dealer who could do the repair, he learned that the trouble should have been spotted in a few minutes and repaired for under $100.

Stories like that serve to illustrate the importance of investigating the service story before you find yourself in need of help.

If you're still shopping around for your new computer, you should address the subject of repair service in detail with your dealer. If you are already the proud owner of a smoothly functioning system, take the time now to avoid the frustration and poor judgment that can take place when your system is down and you don't know where to turn for help.

The fact is that it is very easy to buy a computer these days, but not everyone who can sell you a computer is prepared to provide repair service. Alas, some dealers have been known to display a singular disregard for the subject once the sale has been made.

Ask the right questions

Whatever you do, don't wait for the dealer to bring up the subject of service — ask!

First of all, find out right up front exactly who will perform the service if you need it during the warranty. Does the dealer have his own factory authorized service facility? Are the technicians his own employees? Did they receive training from the manufacturer? Can you take a look at the shop?

By the way, don't waste your time shopping around for a warranty that will postpone out-of-warranty repair charges. A 90-day warranty is all but standard in the micro industry, whether you're buying a big name like Apple or IBM, or one of the lesser-known makes.

If the dealer doesn't have his own repair facilities, find out exactly where the nearest factory-authorized service center is located and ask whether you will have to carry-in your baby or whether on-site service will be available. This may not be so important for a company used only for home applications, but in a business system, carry-in responsibility may be an unacceptable condition. Ask, too, about turnaround time. Some of the more aggressive servicers are now offering competent while-you-wait service, while some shops can be very hard to pin down on this subject.

In fact, you'll want to make certain that you'll be able to obtain service — period. Those mail order ads are very tempting, and some of them offer perfectly legitimate opportunities to save a buck. You should be aware, however, that some dealers are absolutely adamant in their refusals to service equipment sold by someone else — especially cut-rate mail order companies. One Computerland manager interviewed for this article said flatly that he would not service any equipment that wasn't sold in his store.

How about that television or electronic repair shop in your neighborhood? Shouldn't TV service organizations be logical places for computer owners to look for computer service? "Of course they should," says independent TV service dealer Joe D'Agostino of Warminster, Pa., "but don't count on it any time soon."

D'Agostino has been frustrated in his attempts to obtain service franchises from the big names in the field. According to D'Agostino, Apple wants its computers serviced exclusively by its selling dealers. A prospective Apple franchisee must have a qualified technician on his payroll in order to get the selling franchise. Texas Instruments does not want to work with independent third-party service dealers. IBM, he says, will not even discuss the matter with him.

D'Agostino, who hopes to see all of this change some day, has been able to obtain repair franchises from two manufacturers of relatively inexpensive home computers, Atari and Intellivision. "This is just how it was in the early days of television," he says. "The big manufacturers were reluctant to cooperate with independent unknowns. Eventually, popular demand won out."

And where you live can be an important factor. If you happen to be located smack in the middle of a large metropolitan area, you should have your choice of dealer or third-party service organizations when you need help. But if you live in a small town, service could be a very long ride away. Better to find out what you're in for before your computer gets cranky. This is especially important if you will need on-site service. While some com-

panies say they can provide service almost anywhere, there may be some wishful thinking involved. After all, on-site service for computers is a new concept for the computer industry. Nobody ever lugged an IBM 360 into the shop for repairs.

Rich Leonowitz of Sorbus says, "We will provide on-site service almost anywhere in the country." But even with the best of intentions, total coverage of the continent from only 160 locations would be a superhuman accomplishment. But whether on-site service is available in your area or not, most dealers will charge you a premium for travel outside of what they consider to be their normal service area, normally a radius of 50 miles or so. Radio Shack, for example, will travel up to 150 miles to provide on-site service, but extra charges are levied after the first 50 miles.

How much will it cost?

If you think that auto repairs or TV service is overpriced, you'd better steel yourself against the shock of that first computer repair tab. Training and equipping a competent computer technician is a costly process, and the charges for his services must reflect that fact. Rates of $80 to $90 per hour are not unheard of, with $50 to $80 being about the average. For on-site service, most organizations will keep the "meter" running from portal to portal, so you are paying that rate even for the travel time necessary to get the technician to your location.

According to Rich Leonowitz, Sorbus service centers have a flat price of $75 for the test and diagnosis of a computer brought in to one of their service centers. Most actual repairs have an additional flat rate labor price, plus the cost of whatever parts of components are needed. For repairs not listed in their flat rate manual, the current time-and-material rate at Sorbus is $50 per hour. Says Leonowitz, "If the customer already knows exactly what is wrong with his computer, he can save the test and diagnosis fee."

One alternative to the pay-as-you-go system for out of warranty repairs is the service agreement offered by almost all computer service organizations and sales dealers. While they go by any number of names such as "service contracts," or "maintenance agreements," all offer the buyer a means for paying a predetermined price in advance to take care of all normal repairs for a given period of time, usually one year.

There are two basic systems for determining the selling price to the customer for a service agreement. First, and most popular, is the so-called percentage method. This is undoubtedly a carryover from the practice of pricing service for the big mainframe computers wherein annual service agreements were usually priced at about eight percent of the original cost of the system.

Agreements for microcomputers are now averaging about eight to 20 percent of the selling price of the system to be covered; the lower end of the range being about average for carry-in service, with the higher price going for on-site coverage. Radio Shack is among the many organizations using some form of the percentage method to price their agreements.

According to Dave Gill of TRW, that firm does not believe in the percentage system for pricing service agreements. Says Gill, "We believe that percentage pricing penalizes the buyer of quality products, and since we prefer to service only quality products, we use a different method to price our agreements."

Gill's logic centers around the premise that quality computers and peripherals are likely to cost more, while requiring the same or perhaps less service. To base the price of the agreement on the higher selling price of a quality system, he says, penalizes the buyer for his good judgment.

Gill says that TRW analyzes such statistical data as mean-time-between-failures (MTBF) and mean-time-to-repair (MTTR) as a basis for pricing service agreements. "Many manufacturers cooperate with us by supplying this information, and we use it in conjunction with our own data to help arrive at a fair price."

Regardless of what method is used to price them, however, service agreements are expensive by most any standard. Using an average of 10 percent, a one-year agreement for a system that cost $3,500 would run $350. Not an inconsiderable sum.

Prices quoted at a local Apple dealer were typical of those turned up in the research for this article. They ran from a low of about $200 up to $395, with the stern provision that only Apple brand systems and peripherals were qualified for coverage. This, by the way, is not an unusual restriction. Many servicers display a profound distaste for systems that are made up of a number of different brands of equipment. You may want to keep that in mind when you are assembling or expanding your system. This may be an advantage to third-party service organizations which normally are more forgiving of eclectic mixtures.

Are service agreements worthwhile? Well, it all depends on whom you ask. Walter Conversano, a free-lance writer, recently paid about $140 to have his printer repaired. "I still think I'm ahead of the game," he says. "Since the printer is in its second year, I'd have paid nearly $300 in service agreements by now."

Small businessman Ed D'Angelo puts it more directly. "I believe in service agreements for equipment that must have regular preventive maintenance, but not for things like computers that are best left alone until they need service."

On the other hand, a good many people quite obviously feel differently, since there are now virtually millions of service agreements currently in effect, with a very high percentage of renewals. One obvious attraction of the service agreement is that it does provide a means of shifting the worry and responsibility of service to someone else's shoulders, albeit for a price.

Regardless of the way in which you choose to handle service for your new computer, though, it's far better to make your decisions while the pleasant glow of the honeymoon is still lighting up your life. That way, you'll be in charge.

William Joseph is a free-lance writer from Philadelphia.

"I WONDER IF HE'S ANY RELATION TO DONKEY KONG?"

RIDING THE PIPELINE

Pipeline Random Access Printing Buffer
Interactive Structures Inc.
146 Montgomery Ave.
Bala Cynwyd, PA 19004
(215) 667-1713
Price ranges from $195 to $440

Reviewed by Ernest E. Mau

Of the seemingly endless supply of printing buffers, each serves one main purpose: temporary data storage between a computer and hard-copy printer. They all intend to free the host computer from printer control and allow it to be used for other tasks while the buffer directs printing operations. However, most buffers also have their individual functions or frills.

Among the most intriguing units is the "IS Pipeline™ Random Access Printing Buffer" from Interactive Structures Inc. Perhaps best known for their PKASO™ Apple printer interfaces with text and graphics capabilities, Interactive Structures has attempted to build a better mousetrap with the "IS Pipeline."

The most obvious feature is its size. It can have from 8K to 128K of storage. Since all memory chips are installed on a single board, even the smallest memory can be expanded in 8K increments as needed. That expansion can be accomplished with a kit available from the supplier, or with dynamic random access memory chips purchased locally. Furthermore, the "IS Pipeline" uses data compression techniques, making effective memory space appear even larger than raw numbers indicate.

Yet the thrill in using this unit is not memory size. Instead, it's the presence of three operating modes. The first, is a bypass mode where data go directly from computer to printer without buffering. That doesn't sound like a big deal, but many buffers don't allow such bypasses. There are times, particularly in word processing, when it's an advantage to not buffer outputs and exert direct computer control over the printout to prevent formatting problems or other difficulties.

The second mode is a conventional first-in first-out (FIFO) buffer capable of using all available memory. This is the common mode for other units, where data are pumped into the buffer at high speed from the computer and transferred out at whatever slower speed may be needed by the printer.

The IS Pipeline Random Access Printing Buffer from Interactive Structures, Inc.

The third and most exciting mode is Random-Access Printing. The "IS Pipeline" can be divided into as many as 63 separate and independent "buckets." Buckets can be various sizes, filled with different data, and printed in any desired sequence on command.

What does that mean to the user? Consider a so-called "boilerplate" job where paragraphs or sections of text are assembled during printing into a complete document, usually by a word processor. Assume the assembly has to be done numerous times — it's a report customized for two dozen clients. The word processor normally outputs each assembled document individually, often filling a conventional buffer and then delaying further output or computer use until most reports are printed.

With the "IS Pipeline," individual elements can be loaded into memory buckets. Then, commands issued from the computer direct the buffer to put the pieces together in particular sequences. This buffer can do the boilerplating and repetitive printing from a single set of data loads, leaving the computer free for other tasks.

The same applies to repetitive printouts where numerous passes quickly fill a normal buffer and halt the computer while it waits for space. With the "IS Pipeline," information is loaded into one or more buckets, and a single set of commands instructs the buffer to print those buckets as many times as necessary. Again, the computer is freed quickly, and other processing tasks may be performed while the buffer does the printing.

If you got carried away, you could tell it to print five buckets one time each, another bucket six times, another three times, and then seven others twice apiece. There's no real limitation to what you do other than your own imagination.

It works! And it works nicely! It takes practice to get used to the commands needed to load and control the buffer buckets, especially with some word processors and other software packages that require a little ingenuity to embed buffer commands. But once a procedure is found, it works well and can save time and costs in many printing applications. The required commands and procedures are well documented, complete with extensive examples above the norm for microcomputer product manuals.

"IS Pipeline" handles text or graphics with equal ease, and the random access commands are structured, so I've found no conflict thus far with any

software or interface used.

In its present configuration, the "IS Pipeline" works with any computer/printer combination using Centronics™ compatible parallel interfacing. Right now, only parallel input and output are available, which probably is all that's needed for most popular microcomputer systems. However, Interactive Structures plans to introduce a four-port model later this year, with parallel input, parallel output, serial input, and serial output switch selected in any desired combination.

Operationally, the "IS Pipeline" has been a gem. The three modes of operation have solved some serious problems this writer has had when using other buffers. It is a better mousetrap, and a practical one at that.

Packaging leaves something to be desired, however. The case is sheet metal, painted bright yellow, and it lacks the look of quality. Bluntly, it looks cheap, but appearance and performance are two entirely different things.

When viewed from the front, there's a large gap between the top and bottom covers. Interface cables exiting from the rear are bent sharply downward instead of coming out straight, and they seem subject to excess strain unless the unit is set at the edge of a table or box so they hang straight down. Supposedly, these problems will be eliminated on the new model.

The unit has no power switch. Power is obtained from a wall-mounted transformer and is shut off by unplugging the unit. The supplier says low power consumption makes it possible to leave the unit on, but I feel it generates a bit too much heat to leave powered continuously. Like most external transformers, the power line connects with a jack, but the connection could be more secure. I've dislodged it accidentally during a printout and lost the buffer contents.

Nevertheless, the unit is capable, and the electronics appear high quality. Several weeks of use have revealed no failures, and the unit continues to operate reliably. Having gotten used to the packaging, I've had no complaints and feel the "IS Pipeline" can be recommended.

The "IS Pipeline," tested and warranted for a full year, is available from $195 with an 8K buffer to $440 for the full 128K buffer.

ZORLOF WORD PROCESSING SYSTEM

ZORLOF The Magnificent Word Processing System
Anitek Software Products
P.O. Box 1136
Melbourne, FL 32935
(305) 259-9397
$69.95 for TRS-80 Models I/III 32K 1-disk

Reviewed by Fred Blechman

Zorlof is the unlikely name for a versatile, easy-to-use, inexpensive word processor. It has many of the features of more expensive and complex word processors, yet few of the disadvantages. Although, as with all sophisticated microcomputer programs, it will take some time and effort to learn to use all the features, you can have Zorlof up and running in a short time.

The first section of the manual, "Getting Started," is included on the Zorlof disk as sample text. This allows you to compare the text and formatting commands with the actual printed results. You learn by using and modifying rather than just reading the manual.

50 printers supported

Zorlof supports over 50 popular printers — parallel and serial — and most of their features. For those printers that offer proportional character spacing, underlining, bolding, subscripts or superscripts, by simply specifying your printer designation at the beginning of your text, Zorloff will send the proper character codes to your printer. The same applies to condensed and wide lettering, or even Graftrax italics. You can specify alignment of left margin, right margin, both margins or centering of any line or group of lines. You can set tabs or indent text on both the left and right side and specify different margins for odd and even pages.

Titles and page numbers can be placed at the top or bottom (or both) of each sheet, and they can be different for odd and even pages. Each header or footer can run up to three lines. You can pause printing between pages when using single sheets and merge a mailing list and data file with the text file to produce personalized documents. All or part of a text can be printed with printer ON/OFF commands in the text. Page lengths and line spacing are specified, as well as the placement of the first line on a page.

Because of the large number of print formatting options, the built-in defaults give you plain vanilla output without any commands at all. It's only when you wish something different than the normal default that you must specify.

Text editing functions

While the formatting capabilities of Zorlof are extensive, most of your effort will be in generating text on the screen. I'm happy to report that Zorlof is fast, logical, and crash-proof. After using other word processors that lost all text without warning, or dropped letters while word-wrapping to the next line, I was delighted to find neither of these problems with Zorlof. The key combinations used to delete characters, words or lines — or even blocks of text — are logical and simple. Inserting text or moving blocks of text is a breeze, and the cursor controls are rapid and efficient.

Some of the features available during text entry are outstanding. For example, you can get a disk directory of any disk at any time. By placing the cursor on any filename, you can load that file at the text cursor position, making text merging a pleasure. The directory feature also allows you to kill obsolete files on any disk to make room for the current text file. And, critically important if you have been using another word processor and already have disk files in other formats, Zorlof loads any ASCII file into text. Zorlof can accomodate five different types of files — Zorlof, Apparat EDTASM, Radio Shack EDTASM, BASIC and ASCII. This means you should be able to use files from most other word processors since most save their files in ASCII. Also, you can edit BASIC programs with word-processing convenience (if the file was saved in ASCII), and even have limited renumbering capability. Furthermore, you can save a Zorlof file in ASCII for use on other word processors. Any type of data or program file can be displayed and edited in "ZAP" (byte-hexidecimal) format. The possibilities are enormous.

I have previously had problems

Continued on pg. 48

THE NEXT STEP

Database Program Generator for the IBM PC
Aeronica Inc.
7415 Pineville-Matthews Rd.
Charlotte, NC 28211
Price $345

Reviewed by Mark Bernstein

Each business is unique, and software that is entirely satisfactory to one firm may be virtually useless to its competitors. This fact creates a perpetual quandary for designers of business software who must decide whether to build simple-to-use systems targetted at a specific, limited market, or to pursue complicated, general-purpose software that strives to be all things to all users, and often turns out to be too complicated for anyone.

The Next Step, Aeronica's new database system, adopts an innovative approach to resolving this problem. Instead of writing a single large, general-purpose program, Aeronica Inc. developed a series of programs that write new programs tailored to the user's specifications. The Next Step is subtitled "Microcomputer Software For Executives" and is meant to be used by business people without extensive computer training.

The Next Step writes programs that build and use databases — collections of records such as purchase orders, address files and inventories. To create a new application, you use The Next Step's program DATABASE, which guides you through the steps required to "paint" a sample blank form on the screen (Figure 1). Specifying a form is quite simple, and The Next Step's documentation is more than adequate, albeit sometimes condescending.

After the form has been designed, The Next Step tells you to insert a fresh floppy disk and proceeds to write a new BASIC program tailored to fit your data. This new program builds the database; with it, you can add new records, delete old records, search for a record you want to examine, or correct mistakes. The Next Step calculates totals, automatically fills in the time and date in appropriate blanks, and automatically checks all new entries to reduce errors and omissions.

The Next Step also creates custom report generators that print a variety of sorted and selected lists abstracted from the database. Like the main database program, the report generator is created from a template "painted" on the computer screen.

This program-writing approach has many advantages. Business users without training or programming experience can design small data management systems in only a few hours.

In a few respects, The Next Step's performance is disappointing. The "screen-painting" approach to form design is nicely conceived but a bit clumsy in execution, leaving the user with limited editing capabilities. The SEARCH command is also rather limited, since it cannot distinguish between different fields in the form. If you search a file for companies that have "Chicago" in their name, you may also retrieve all the entries that list Chicago as their address, or that ordered your firm's "Chicagoan raincoat." The SEARCH command does not support wildcards, an inconvenience when you know a part of the field you want to find, but not the entire field. Both these problems can be overcome with patience, but both are annoying.

The database programs that The Next Step creates are written in BASIC. The programs may (usually) be compiled using the IBM/Microsoft BASIC compiler, but even the compiled versions will be comparatively slow in handling databases exceeding a few hundred records. Sorting a file of 1,000 records, for example, may take 10 or 20 minutes.

On the other hand, the fact that The Next Step creates standard BASIC programs allows technically-sophisticated users to reconstruct and customize the database and report programs, providing additional special features. However, this flexibility is a two-edged sword; a competent BASIC programmer can easily defeat the program's rather primitive password mechanism to gain access to confidential files.

The Next Step is supplied on five single-sided floppy disks. Disks 2, 3 and 4 are not copy protected, while Aeronica supplies two copies of (uncopyable) Disk 1.

Despite its speed problems, The Next Step may fill a useful niche for many users needing small, simple, and inexpensive data management.

THE LOCAL NETWORK HANDBOOK

Edited by George R. Davis
McGraw-Hill Inc.
256 pages

Reviewed by Earle Holland

The idea of tying together individual computers is almost as old as the computer itself. Whether it's a thousand terminals linked together within a major multinational corporation or simply a dozen home computers tied to an electronic bulletin board, it's still called networking.

And while the benefits of such setups are great, so often are the handicaps that must be overcome before a network can begin to work.

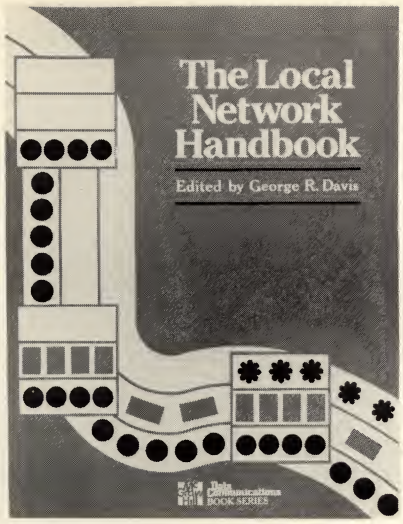
So when George R. Davis, editor-in-chief of Data Communications, decided to tackle the subject for that magazine's book series, he compiled a collection of articles that deal with nearly every imaginable aspect of networking. He might just as well have titled it "Everything You Ever Wanted to Know about Local Networks, But Were Too Ill-Informed to Ask."

This is the seventh in Data Communications' book series, and it contains 32 articles orginally written for the magazine over the past five years. Davis explains that all of the articles fit into one of two categories: those related to local networks in some way when they were published, or those that have since been found to relate to networking now that the idea is interesting more people.

The book is divided into six sections dealing with technology, software, equipment, implementation, applications and network selection. Each section offers from three to eight articles on certain aspects of the topic.

A cursory glance at much of *The Local Network Handbook* might easily scare off the computer neophyte, but it should not. While the book does contain an abundance of complicated charts and graphs, flow diagrams and heavy doses of computer jargon, it also contains a handful of introductory articles on subjects like computer security, data transmission devices and how networks work.

Of special interest is the section dealing with applications. It offers a



two-part package on data communications in the office, a forecast on which technology will rule the automated office including the individual views of nine experts in the field, and an overview of how future developments in data communications are being developed at major universities.

At the beginning of his book, Davis corrects one misconception about local networks. They're not cheap! To develop a local network that isn't limited in scope, he says, the cost should run about $1,000 per station in the network, not including equipment. And while there have been forecasts of these costs dropping drastically in the near future, he predicts any decline will be gradual.

Davis' newest project won't keep you on the edge of your chair in suspense. In fact, in some places, the text provides a proven cure for insomnia. But for those readers interested in the whys and hows of local networking, it offers a wealth of information.

CREATIVE DESIGN WITH MICRO COMPUTERS

by Steven K. Roberts
Prentice-Hall, Inc.,
NJ 07632
$28.95 in hardcover as *Industrial Design with Microcomputers*; $14.95 in softcover

Reviewed by Ernest E. Mau

At a time bookstores are stocking shelf after shelf of introductory books to the subject of microcomputing, it's refreshing to find a serious volume on something other than elementary applications. Steven K. Roberts' book *Creative Design with Microcomputers*, is just such a work, dealing with microcomputers applied to a wide variety of applications outside the home or small-business office.

Since such applications are far less visible than the highly touted and advertised home and office uses, we often forget how important microcomputers are for controlling and automating things like manufacturing processes and machinery — applications that often push microcomputers and system designers to their limits. Such applications traditionally have been in the domain of specialists. Now, Mr. Roberts' book comes along as an excellent reminder of those uses, as well as a delightful explanation of the hows, whys, and wherefores of industrial-process control and system design.

Drawing on his extensive experience with real systems, Roberts has skillfully approached a difficult and often baffling subject. His craftsmanship as a writer and a designer are evident in an admirably constructed presentation of subjects as diverse as hardware interfacing, artificial intelligence, software design, and others.

Perhaps the most remarkable thing is that this book is readable. One doesn't need an engineering degree to understand the material. Yet it's not oversimplified. With logical progression through subjects, extensive illustrations, and thorough explanations of terms, Roberts leads the reader through the complex world of system design, following a clear, understandable, enjoyable, and even philosophical path.

Of course, the subject does limit the readership somewhat. A book of this type is not aimed at the novice, so the first-time computer hobbyist or small-business operator isn't likely to need it. However, intermediate and advanced computerists or those with specific interests in industrial processes and system development will find the book packed with information. The discussions of software tools like operating systems and software tactics such as dealing with data are worthwhile reading for anyone, provided the reader has some familiarity with the fundamentals of microcomputing.

Creative Design with Microcomputers promises to be a valuable addition to reference libraries for industrial engineers, system designers, programmers, and virtually all "serious" computer users.

The hardcover edition, titled *Industrial Design with Microcomputers*, with a cover price of $28.95, may be a bit expensive for some people, though this reviewer considers it worth the price for anyone seriously interested in the subject. It is produced to higher quality standards than most computing books released these days, and it's by a major publishing house.

For those who are cost conscious, however, the retitled softcover edition from Prentice-Hall should be on the market this month. The new title better reflects the contents — and it carries a considerably lower price, making the information more easily affordable.

TRS-80 MODEL 100

TRS 80 is a trademark of the Tandy Corporation

Monthly magazine loaded with Software and Hardware Reviews, Useful How-to Tips, Program Listings, and Accessory Interface Suggestions for this unique new computer. Whatever your interest in this notebook size portable, this exclusive publication will help you realize its maximum potential while saving you money. Regular subscription rate is $24/year (12 issues), however charter subscriptions are available for a limited time at $9.00 for 6 months or $16.00 for 12 months. VISA MasterCard customers call 800-227-1617 ext 425
In California 800-772-3545 ext 425 or send check or Money Order to:

briefcase portable
560 South Hartz Avenue, Suite 447 • Danville, CA 94526

TRADE SECRETS

by James Pooley
Osborne/McGraw-Hill
139 pp.

Reviewed by Stewart Schneider and Charles Bowen

Anyone who has invested the blood, sweat and scotch necessary to develop a new program comes away from the experience with the conviction that anything that hard to do simply has to be valuable. And if it's valuable, somebody is likely to try to steal it.

That simple fact of life has led to a great interest in copyright law. Although Mr. Pooley discusses copyright protection, the main thrust of the book is on trade secrets, a less well known legal mechanism for the protection of intellectual property.

Trade secrets, Mr. Pooley points out, is a developing area of the law, with a considerable degree of uncertainty, at least compared to the more settled law of patents. But developing or not, the law of trade secrets offers important protection for truly valuable intellectual property.

The difficulty with depending on trade secrets to protect computer programs is that the efforts needed to maintain the trade secret status of a program are quite expensive, and the advise given by Mr. Pooley is clearly out of range of the average computer hobbyist. In the event of litigation, the expenses would be quite high.

The book isn't really directed to computer hobbyists in any event, but more toward giving corporate management an overview of ways to protect proprietary information, and to prevent former employees from leaving the company with valuable information gained during employment to go into competition with their former employer.

Trying to cover this very complicated material in a non-technical book is perilous. Unlike copyrights, trade secrets are easily lost through inadvertence, and the rules governing their enforcement differ from state to state. Competent legal advice is an absolute necessity to adequately protect your valuable secrets, and if you had the resources to follow Mr. Pooley's advice, you would also have a corporate legal staff to advise you. Conversely, if you can't afford a legal staff, you probably lack the resources to implement Mr. Pooley's advice.

This does not mean that Mr. Pooley's book is worthless. Far from it. He has done an admirable job of covering the material in a readable fashion, and the book contains sufficient information to give the reader a "feel" for the issues that will be faced in the usual trade secret litigation.

INCOME FROM YOUR HOME COMPUTER

by Edward J. Lias
Reston Publishing Company Inc.
161 pp.

Reviewed by Earle Holland

Reading this book can be an exercise in nostalgia.

Remember those advertisements that filled the back pages of the comic books we used to read as kids? "Grow mushrooms in your basement for fun and profit!" or "Make a million in worm ranching!"

I didn't really see a pot of gold waiting in cultivating either fungus or worms then, and I don't lend much credence to the majority of Lias' "get-rich-quick" schemes now.

That's not to say that somewhere, someone won't see an appealing method of making a few extra bucks in his multitude of ideas. It's just that he implies that there's mountains of money to be made out there with little or no effort, simply because you own a microcomputer.

It's almost like writing a book on "20 ways to make money with your lawnmower." Sure, there's money to be made in using your home computer as part of a cottage industry, but few people are earning a living that way.

One of his first suggestions entails charging people to help them unpack and setup their own home computers. Most of the folks I know who own home computers were intensely possessive when it came time to unpack their new toy; and the dealer they bought it from was just a phone call away if setup presented any problems.

There seems to be a fatal error in Lias' logic in proposing these suggestions. He maintains that about three-fourths of the two million home computers purchased are sitting unused in family closets. And it's these machines he claims should be turned to a profit-making mode.

Maybe so, but he's talking about those folks who paid only a couple of hundred dollars for their machines. These are the people he's suggesting should be trying to sell software to computer companies or hire themselves out for word processing.

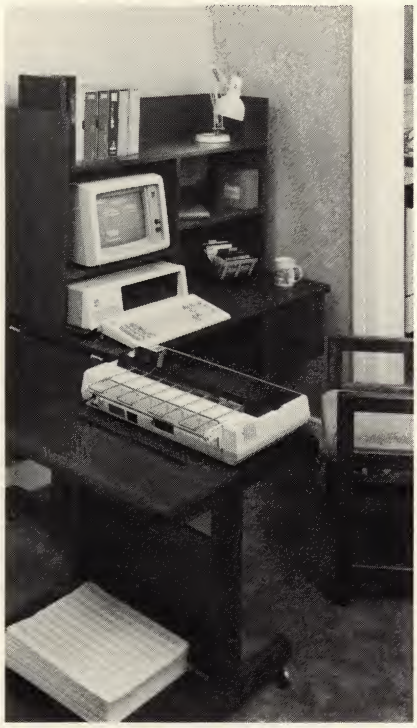
If salesmanship is your strong suit, he suggests renting your dusty, unused computer to "local schools and colleges" or setting up "coin-operated computers" in libraries. He even devotes three whole pages to how to start a computer store.

Late in the book, he mentions the use of home computers as tools in writing stories for magazines, all dealing with computing.

True, many writers have traded their typewriters for microcomputers and are pleased with the results. But Lias implies success as a writer depends on having the computer; talent doesn't enter into the discussion.

And books on the uses of computers is another area where money can be made. But just how many books on making money with computers is the average person going to buy? For me, one was quite enough.

"HEY, MAYBE WE COULD LINK UP WITH THE PLAYBOY COMPUTER AND GET ALL THE HOME ADDRESSES OF THEIR BUNNIES!"



FROM THE WOOD WORKS

The Wood Works, manufacturers of hand-crafted worktables and printer tables, has introduced a new line of chairs, drawer units and adjustable shelves.

Chairs are constructed of solid oak, walnut and cherry with beige or brown upholstered seat cushion. Chairs sell for $120 in oak and $150 in walnut and cherry.

The adjustable shelf unit, designed for storage flexibility, includes two adjustable shelves and a fixed bookshelf. The attractive, efficient unit costs $105 in oak and $150 in walnut and cherry.

The drawer unit which can be added to any standard Wood Works worktable is designed for diskette storage and includes a pencil trough. It is available for $58 in oak and $68 in walnut and cherry.

These new products are available in both stained and natural finishes. For information, contact The Wood Works, 11th and Haskell, Rt. 2, Box 407, Lawrence, KS 66044; (913) 842-7797.

FLIPTRACK OFFERS NEW COURSES

Learning to use new software and hardware can be tricky, but with the aid of audio cassettes from FlipTrack Learning Systems it's like having a teacher by your side.

One of the newest offerings is "How to Use WordStar and MailMerge," which includes four cassette tapes and a fully-indexed user's guide for easy reference and summarization of key points and procedures. The full WordStar course is included plus a cassette lesson on how to prepare form letters and mailing lists, insert and adjust "boilerplates," print multiple copies and more.

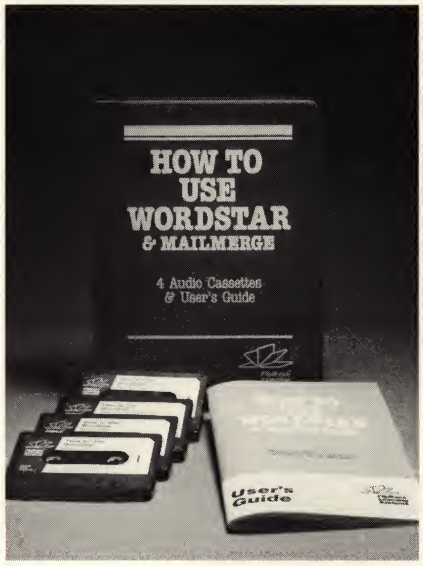
The course, which sells for $65, is adaptable to any computer that runs WordStar and MailMerge programs and the cassettes require no computer hook-up.

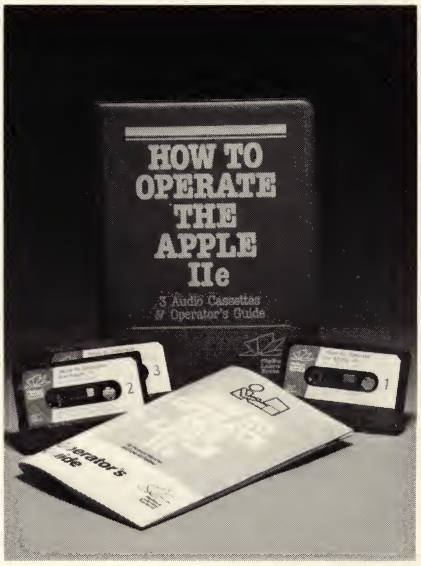
In addition, the company has introduced a new training course on how to operate the Apple IIe computer, which picks up where the demonstration diskette provided by the manufacturer leaves off.

In about six hours of "hands on" instruction, the tutorial talks the first-time computer users step-by-step through the procedures needed to use each special key and essential command, load and run programs, save programs and data, copy programs or diskettes, protect programs, modify them and much more. No technical knowledge is assumed.

The course includes three spoken voice cassettes featuring a fully indexed operator's guide for easy reference and review.

For information, contact FlipTrack Learning Systems, 526 N. Main St., Box 711, Glen Ellyn, IL 60137; (312) 790-1117.





PRINTER RIBBONS CATALOG

If you want to save those words of wisdom or perfectly computed formulas, push the print button. But before you do that, check out Aspen Ribbons' newest catalog of "Ribbons for Computer Printers."

The free, 16-page booklet pictures and describes 288 ribbons, many of which are designed for the wide variety of new computer printers manufactured for the home computer user. For a copy of the catalog and a price list, contact Aspen Ribbons Inc., 1700 N. 55th St., Boulder, CO 80301-2796; (303) 444-4054.

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NEW SOFTWARE FROM COMMODORE

Commodore has introduced several new software packages for its Commodore 64 computers.

Magic Desk brings an animated, full color desk to your television screen. There is a typewriter, index file, telephone, calculator and financial journal on the desk and a wastebasket under the desk. In addition, an artist's easel and a vertical file cabinet with a digital clock on top is pictured. By using a joystick, trackball or mouse, the user moves a pointing finger to one of the objects on the screen and actually activates them.

Current applications include the typewriter, index file and related editing and filing features. Future packages will provide calculating and budget applications, artistic and educational applications. Available this fall, Commodore plans to price each cartridge under $100.

PORTABLE EXECUTIVE 64 COMPUTER

Commodore Business Machines has introduced a portable computer designed for the traveling businessperson. Designated the Executive 64, the new portable has 64K RAM, a full upper/lower case low-profile detachable keyboard, built-in six-inch color monitor and a built-in single floppy disk drive with 170K capacity. The unit weighs just over 27 pounds and is briefcase size.

Fully compatible with VIC 20 and C-64 peripherals, the Executive 64 retails for $995.

In addition, the company recently released six new adventure games, which are titled *Zork I: The Great Underground Empire, Zork II: The Wizard of Frobozz, Zork III: The Dungeon Master, Deadline, Starcross* and *Suspended*. Commodore says these new games are more challenging, since they make the player think, analyze and make decisions.

Commodore has also published the 3rd edition of the "Commodore Software Encyclopedia," which lists nearly 2,000 entries of software from around the world. It is the most comprehensive single software reference for Commodore computers and lists for $19.95.

For information, contact Commodore Business Machines Inc., Computer Systems Division, 1200 Wilson Dr., West Chester, PA 19380; (215) 431-9100.

BLACK BOX EXPANDS TLSI DEVICE FAMILY

Black Box Catalog now offers three different Terminal/Modem/Line Sharing Interfaces (TLSI) with two, four or eight ports. The TLSI can connect up to eight terminals to one modem, line or port thereby sharing a costly communications link.

These devices are active modem sharing units that electrically isolate attached terminals. Terminals connected to the TLSI operate with a modem, modem eliminator or line driver as if each device were dedicated with no sharing taking place.

Each TLSI operates with built-in contention, sequentially scanning the RTS lead of each terminal. The two-port Electronic Y Cable sells for $295, and the four and eight port models are $425 and $750 each. Units may be cascaded to provide additional expansion potential.

For information, contact Black Box Catalog, P.O. Box 12800, Pittsburgh, PA 15241; (412) 746-2910.

PORTAWRITER FROM INFOSOFT

InfoSoft Systems has introduced a state-of-the-art portable executive information workstation called PortaWriter. The unit uses I/OS, an advanced CP/M-compatible operating system from InfoSoft.

PortaWriter features the largest liquid crystal display available with eight full 80 character lines. In addition, it has a full size keyboard and eight function keys and weighs in at less than five pounds.

Other features include 32K RAM cartridges with battery backup power that are compatible with Olivetti and other systems, as well as options for a modem, RS-232 serial ports and external floppy disk drives. The PortaWriter has 128K of permanent ROM memory which stores executive-oriented applications software.

The unit retails for $1,400 to $2,000, depending on options. For information, contact InfoSoft Systems Inc., 80 Washington St., Norwalk, CT 06856; (203) 866-8833.

COMPUTER PRINTER IS OVER-ACHIEVER

Brother International has introduced the HR-15 Two-Color Daisy Wheel Computer Printer, which the company calls the "over-achiever" since it delivers letter quality hard copies, operates virtually trouble-free for maximum productivity, and is easy to use.

The HR-15 printouts are in black and red. The printer has an exclusive cassette daisy wheel printer, 3K memory that retains information even when off-line, 10, 12, 15 and proportional spacing pitch selector, bi-directional printout from memory, optional form and sheet feeding, almost 800 characters per minute printing speed, auto underscore and super and sub-script.

For information, contact Brother International Corp., 8 Corporate Pl., Piscataway, NJ 08854.

AURA INTEGRATED SOFTWARE

Softrend Inc. has announced that the company's AURA series of integrated office software will be ready for delivery in December. The complete AURA 5 system for the IBM PC and systems running MS DOS incorporates a database management system with report generator, a spreadsheet, graphics, word processing and a three-mode communications package. Suggested retail price is $995.

The AURA 3 includes only the DBMS, word processing and spreadsheet functions and sells for $395. AURA 4 adds the graphics for a cost of $495.

The AURA series is menu-driven. Help screens are available throughout and function keys may be user defined.

For information, contact Softrend Inc., 87 Indian Rock Rd., Windham, NH 03087; (603) 898-1777.

DATATALKER I EMULATES IBM

DataTalker I, a new product from Winterhalter Inc., is an intelligent front-end communications processor that allows most microcomputers to emulate the following IBM remote batch and interactive terminals: IBM 3780, IBM 2780, IBM 3741, IBM 2968, IBM 2770, the IBM 3275 standalone terminal and the IBM 3271 and IBM 3276 cluster terminal configurations. The protocol is the IBM Binary Synchronous Protocol.

The DataTalker I contains Winterhalter's network software, NS3270 (for interactive emulation) and NS3780/2780 (for remote batch emulation). Both programs offer user configurability, allow full bisync emulations and come with both on-line and off-line diagnostics.

List price is $995 with discounts available for volume purchasers and distributors.

For information, contact Winterhalter Inc., P.O. Box 2180, Ann Arbor, MI 48106; (313) 662-2002.

ROMOX GAMEPORT FOR TI 99/4A

Romox Inc. has intoduced its GamePort expansion module for the Texas Instruments 99/4A home computer. The GamePort accepts existing ROM cartridges and is priced at $39.95.

The GamePort add-on will make the TI home computer compatible with existing cartridges, making it possible to use advanced arcade-quality games. According to Romox president Paul Terrell, this product is being marketed in response to Texas Instruments' intent to modify its internal compute software to accept only cartridges programmed in Texas Instruments' patented "GROM" format. The effect of this modification would be to limit third-party publishers to TI manufacturing channels.

With GamePort, TI users will be able to choose from hundreds of games that should become available from independent publishers over the next few years.

For information, contact Romox Corp. in care of Frank Barth Inc., 500 S. Fifth Ave., New York, NY 10110; (212) 398-0820.

CTS COMPUTER WORKCENTER

Getting organized is often the most difficult part of any job. CTS Metal Products can help you get your desktop computer system organized with its new computer workcenter. Its unique vertical concept allows maximum work and storage area while minimizing floor space requirements.

Units offer adjustable shelving to various heights, front or back, and a tilt feature designed to minimize monitor glare. Various widths (36 and 48 inches) and color combinations are also available.

The workcenters retail for $179 and $209. For information, contact CTS Metal Products, Monon Division, St. Rd. 16 West, Monon, IN 47959.

APCO OFFERS COMPUTER COST SAVINGS

The Alliance of Personal Computer Owners (APCO) is a new and innovative way to save money when buying all types of computer hardware, software and peripherals. The group offers its membership large discounts on most computer items by negotiating with manufacturers and distributors for the best possible price.

APCO is not associated with any one brand of computer or with any one level of user activity. All savings are passed on to the members, who include users from universities, corporations, government, schools, libraries, user groups and others. Because of low overhead and a large membership, APCO is able to offer volume discounts to individuals.

Annual membership dues are $6, and fees can be waived for groups of 12 or more when they join as a unit.

For information contact, Ed Hall, president, The Alliance of Personal Computer Owners, 683 Towle Way, Palo Alto, CA 94306; (415) 856-7467.

EDUCATOR'S GUIDE TO PERSONAL COMPUTING

TLC now means more than just tender, loving care. Seldin Publishing has introduced a new magazine titled *TLC* — Teaching, Learning, Computing — that serves as the educator's guide to personal computing. According to the publisher, *TLC* was created to provide guidance in the acquisition, implementation and use of personal computers for educators, administrators and anyone involved in the educational process.

Topics covered include computer literacy, purchasing a computer, software acquisitions and innovative computer teaching applications.

For information, contact Seldin Publishing Inc., 1061 S. Melrose, Suite D, Placentia, CA 92670-7180; (714) 632-6924.

DRINKS ON A DISK

Learning to mix drinks is easy with "Drinks on a Disk" from Homemaker Software. This "computerbook" is an automated home bar guide and contains over 100 recipes for drinks.

Thirty-two categories, as varied as "Old Favorites," "Trendy Drinks," "Hot Drinks" or "Drinks for a Crowd," are included. In addition to the recipes the disk has information about equipping and stocking a bar, measurements and types of glassware.

The product sells for $14.95 and can be used on Apple or TRS-80 computers. For information, contact Homemaker Software, 683 Towle Way, Palo Alto, CA 94306; (415) 856-7467.

ORANGE TWO IS AN INFLATION FIGHTER

Orange Plus Computer Systems has introduced the "Orange Two," a 64K personal computer billed as the "Inflation Fighter."

Retailing for $1,095, the package includes dual microprocessors with the radical new Orange Plus development EuroROM, which allows the machine to read/write/work with Apple-type software as well as CP/M programs and access either CPU via the keyboard.

For information, contact Orange Plus Computer Systems, 23801 Calabasas Rd., Suite 2050, Calabasas, CA 91302; (213) 999-5210.

EPSON COMPUTER CASES

Case it up! The Computer Case Company has introduced a line of cases for the Epson computer products accommodating the HX-20 and the QX-10 computers as well as their printers.

The EP551 case, which retails for $169, holds the complete QX-10 set-up, including the computer unit, the keyboard and the monitor. The EP560 case, which retails for $119, holds the HX-20 computer along with the expansion unit and modem. This case is about the size of an attache case and has ample additional room for accessories, manuals and working papers.

For information, contact the Computer Case Co., 5650 Indian Mound Ct., Columbus, OH 43213; (614) 868-9464 or (800) 848-7548.

VISICALC FOR MEDICAL PROFESSIONALS

CMA Micro Computer has introduced a new VisiCalc template for the medical profession designed to operate on the Apple III computer. The application, called MediCard, allows the small medical practice to handle its complete private billing and AMA universal claim form preparation using the program and a copy of the Apple III Information Analyst package.

The package allows the user to quickly enter the practice billing address and other necessary information to customize the system to the practice. Patient files can be created for individual patients or families. As transactions occur they can be entered onto the system for end-of-the-month billing, immediate time of service statements or claim form preparation.

The package is available for $249.95. For information, contact CMA Micro Computer, 55722 Santa Fe Trail, Yucca Valley, CA 92284; (619) 365-9718.

MAKE YOUR OWN KIND OF MUSIC

With the Music Master interface card from Orange Plus Computer Systems, any computer user can make his own kind of music. This state-of-the-art package allows the user to create, play and store music. Simple insertion into slot 2 on a 48K Apple-type computer is all that's required to convert a computer into a music machine.

The Music Master card comes in a complete self-contained package with everything you need to hear and play computer-generated music. Along with the card is included detailed instructions, keyboard coding labels and two mini stereo speakers with audio cables. With an easy to obtain adaptor, a stereo amplifier with external speakers can be hooked up.

Suggested list price is $199.95. For information, contact Orange Plus Computer Systems, 23801 Calabasas Rd., Suite 2050, Calabasas, CA 91302; (213) 999-5210.

SOFTWARE FOR SCHOOLS

CMA Micro Computer has released a new version of its popular Class Scheduling Program. The advanced version offers new editing procedures for editing groups of courses in the master schedule.

The Class Scheduling Program allows schools with up to 2,400 students and up to 999 courses and sections of courses to analyze the master schedules and prepare individual student schedules. The system allows for the automatic entry of required courses and the fast entry of any optional request and alternates. The system will provide course tallies and conflicts matrices for all requests.

It is designed to work with the firm's Grading programs and Attendance bookkeeping system. The system requires a 48K Apple with Applesoft, two disk drives and an 80 column printer.

For information, contact CMA Micro Computer, 55722 Santa Fe Trail, Yucca Valley, CA 92284; (619) 365-9718.

WHO WILL BE OUR GATEKEEPERS?

An editor would never consider turning over the magazine or newspaper to you to let you publish whatever you wanted, any more than a television news director would give you free run of the station.

Editors and news directors are what communications scholars these days call "gatekeepers." It's their job to judge what's worthy of print or air time, based on their feeling for what is important, interesting, thought-provoking or entertaining.

They are authority figures, who, without election to office, hold a public trust as old as the printing press itself.

And not only are they charged with telling us what's "fit to print" (or air), but also what's not. For example, when it comes to libel, slander, fraud or invasion of privacy, our courts often rule the gatekeeper — this time, the publisher — is more responsible than the original author.

For all our freedoms to choose, we expect — demand, really — that our gatekeepers do their job.

So, what happens when we suddenly have access to a national audience without gatekeepers? By way of videotex, thousands of us communicate with one another every day without anyone previewing our words. And frankly, some people are scared about that.

What happens (say The Nervous Ones) if the enormous power of videotex is used to defraud or defame innocent people? Who's accountable?

And what is videotex, anyway? Is it a publication, like a magazine, subject to media law? But if it can't have gatekeepers, is videotex a common carrier, like a utility company? And if so, who pays if someone gets hurt by these messages — particularly since the messages you post in the interactive features of CompuServe and other information services might be left anonymously or under a fraudulent name?

And perhaps the biggest question of all: Can these issues be resolved without regulating videotex to the point that we destroy its very uniqueness — its immediacy?

Most of us who use this exciting medium know there is a uniqueness worth preserving. Central to all of these issues is the idea that videotex is a kind of community. The messages in videotex's interactive forums and conference areas are not unrelated, like items on a page of newspaper classified ads. Instead, they all fit together as a common experience. We know the quality of that experience can be improved or diminished by how we use it. By how we behave.

Such a free forum could enhance understanding of differing points of view, or could degenerate into an electronic shouting match.

It could inspire new imaginative art forms — group literature, interactive game/stories. Or the art could wither in a structureless environment, sapped by a committee mentality.

Finally, such instant, unsupervised communication could reach new levels of honesty or result in an epidemic of fraud until finally nothing there could be trusted.

Last year the members of the Software & Authors Special Interest Group in CompuServe's Personal Computing Section daydreamed a little about the nature of this electronic community and the role of gatekeepers as electronic cops. As with so many things about the future of this medium, there were more questions than answers.

It all started when a member of the group reported on a discussion with friends at which talk turned to CompuServe and whether it was evolving into "a nation."

"After all," he noted, "are geographic boundaries essential to a 'community,' or can one exist in which citizens live in different parts of the world?

"And, if so, will we see the day when it will be given the rights of any other society, such as voting and representation in the government?"

Early on, someone doubted that videotex could be considered a community because an essential element of any society is commerce. Aside from some new micro-related businesses like electronically delivered software and tele-typesetting, he said, there was no commerce among the "citizens" of this electronic village, which he dubbed "Micropolis."

Wait a minute, someone else said. If Micropolis is a product of what the futurists call "The Information Explosion," then the value of information itself has to be taken into account. If, via videotex, someone gets information that helps him make better investments, write better programs or build better houses, then business can go on between information providers and information consumers — voila: commerce.

Another person argued that Micropolis was too specialized to be a true community. Real societies have their strength in their diversity, but in videotex, everything centers around discussion of computers. Even in non-technical areas of CompuServe, he said, like legal or medical special interest groups, discussion of computer-related subjects still is prevalent.

That's not a flaw, someone else said. That's just a sign that Micropolis is still an infant. Many geographic communities were formed for the common needs of a specific group — think of all the steel towns on river fronts and railroad towns created at strategic junctions of the lines. Only with time did these towns attract citizens not associated with the needs of the founders.

"But it's impossible to have a true community if no one knows what each other looks like," one debater said.

"Why not?" said another. "I live in Pittsburgh and don't know half the people on my block, much less in the city."

Finally, it was on the issue of authority that brought the debate to a halt. You can't have a society, went the argument, without rules, and you can't have rules if they can't be enforced. The problem for Micropolis is its gatekeepers have little flexibility to enforce rules. For instance, the other citizens have no proof that new members

COMING IN THE OCTOBER ISSUE OF TODAY

Mixing Business With Micros
Are microcomputers and networks tools for creativity that free workers from the mundane so that they may conceive the magnificent? Or are they tedious taskmasters that numb the minds of bored employees? TODAY takes a look a three national studies commissioned by major American corporations.

Information Retrieval in Business and the Professions
Quick! How many drywall contractors are in Topeka? What is the U.S. market for medical razors? How do you weld bismuth? Is there a book about barnacle-proofing with organo-tin compounds? What is Amoco up to with its acquisition of Solarex? Questions like these confound the business community every day, but new on-line tools offer a global information resource of unprecedented scope and timeliness. Find out how to put information retrieval to work in your business.

After the Gold Rush
There is a certain "gold rush" fever associated with microcomputers sometimes. Magazine ads tell computer owners they can make thousands of dollars selling their programs. Others dream they can make a fortune selling newsletters and special sevices related to the computer community. But some such entrepreneurs find that there's a long period of darkness before that "overnight success."

— or immigrants — are truly who they say they are, or that what they say is true. There's no way to verify what they say.

And if those in charge of the system determine that a citizen is defrauding other people, they may decide to bar him from that on-line club, or perhaps from the entire system. But that may be only a temporary solution — the offender can simply purchase a new access number and re-enter under a new identity.

So the authorities are limited to a kind of Boolean editing, able to say "yea" or "nay" on a message or a subscriber, but generally unable to restrict behavior.

And that's really what all the hoopla's about — trust. The interactive features of videotex depend more than any other form of communication on trust.

Well, I'm not so sure that's a bad thing at this stage in our community's growth.

After all, in society — the real one, all around us — we depend on trust, from the traffic intersection to the ballot box.

In the world of communications, Micropolis still is a tiny village, and even though we're growing at a breath-taking rate, trust still is serving us very well. From day to day, there's relatively little serious abuse of our freedom here. Most of it is nothing more than annoying pranks.

I'm not a Pollyanna. I know that one day videotex may be regulated. The potential of our new village may be just too tempting for some old-fashioned con man (or maybe a new-fashioned con man).

I would expect us First Families of Micropolis to make our feelings known loud and clear about how we want the situation to be handled. And it makes me feel good to know that our prerequisites for self-government will be influenced by what we remember about today — the golden years of videotex, the honorable years, when all of us were our own gatekeepers.

ZORLOF

Continued from pg. 37

with word processors keeping up with my hunt-and-peck typing during inserts or at the beginning of word-wrapping lines. I have yet to "outrun" Zorlof, even with bursts of high speed entry, and even in the insert mode, since it is written entirely in Z80 machine language with type-ahead keystroke buffering.

Justification and word wrapping occur in real time on the screen. Reverse word-wrapping fills an incomplete line above the current line. At any time, the screen can be scrolled up or down, or you can go to the top or end screen of text without scrolling. The contents can be dumped to the printer anytime. You can search text anytime for a string of up to 28 characters (including "wild-card" characters), or search and replace a string with another string. Blocks of text can be moved, copied or deleted.

Printer preview

Perhaps one of the most convenient and frustration-saving features of Zorlof is its print-preview functions. Instead of printing out the text only to find out halfway through that you omitted some kind of formatting command, you can preview the text on the screen. This will show headers, footers, page breaks, justification, line spacing and just about everything but type fonts, underlining, subscripting and superscripting. In this way, you can correct text or printer commands before taking the time to print it out first.

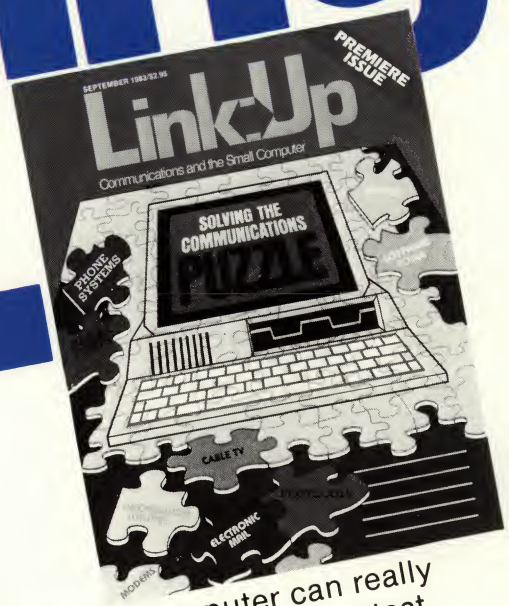
Zorlof allows access to special characters and printer codes that you may wish to use. Line width can be set from 5 to 128; if you specify more than the 64 characters the display can show on a single line, two display lines will be used. Two lines continuously residing at the top of the screen tell you the filename (which you can save to disk at anytime), the line width, the number of words, number of lines, and the free memory size. (Free memory with a 48K Model III is 25,708 before any text is entered.) There are also spaces to enter a "search" and "replace" string.

I was surprised that multiple printer copies could not be commanded directly. A print queue allows up to 13 files to be printed one after another, and you could make multiple copies of a single file that way. A hardware spooler such as the Microbuffer, MicroSpooler, or SooperSpooler, allows you to pre-program any number of copies.

The version of Zorlof I have (2.19D) does not allow you to exit Zorlof and return to the text; the only exit is pressing the computer RESET button. EXIT/RETURN may be provided in a forthcoming release.

The 96-page detailed manual is excellent. It's bound in a three-ring binder with pockets front and back for the disk and any notes of your own. A cardboard card acts as both an index and command summary. It lists 59 editing functions and 39 printer commands, with summary of use and manual page number for detailed explanation. Furthermore, Peter Ray, Zorlof's creator, schedules appointment times for registered customers to call with questions. It appears that Anitex not only has a great product, but they provide the necessary support as well.

Nothing Else.



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